NOVEMBER
1961
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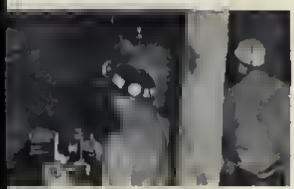
35¢

AMERICAN Cinematographer

The Magazine of Motion Picture Photography

LMING "BACK STREET" Page 660

G FILMS AT ROCKETDYNE Page 670



GRAPHY IN A COAL MINE Page 674

TECHNICAL TRAINING FILM Pg. 672

THE PHOTOGRAPHY OF "BACK STREET"

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Lighting For Photography In A Coal Mine

•

MAKING FILMS AT ROCKETDYNE

•

The Case For The Inventor Of Motion Pictures

TECHNICAL QUESTIONS & ANSWERS • BEHIND THE CAMERAS
WHAT'S NEW IN EQUIPMENT, ACCESSORIES, SERVICES • HOLLYWOOD
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November, 1961 Vol. 42, No. 11

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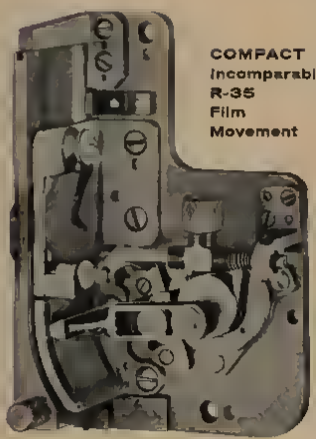

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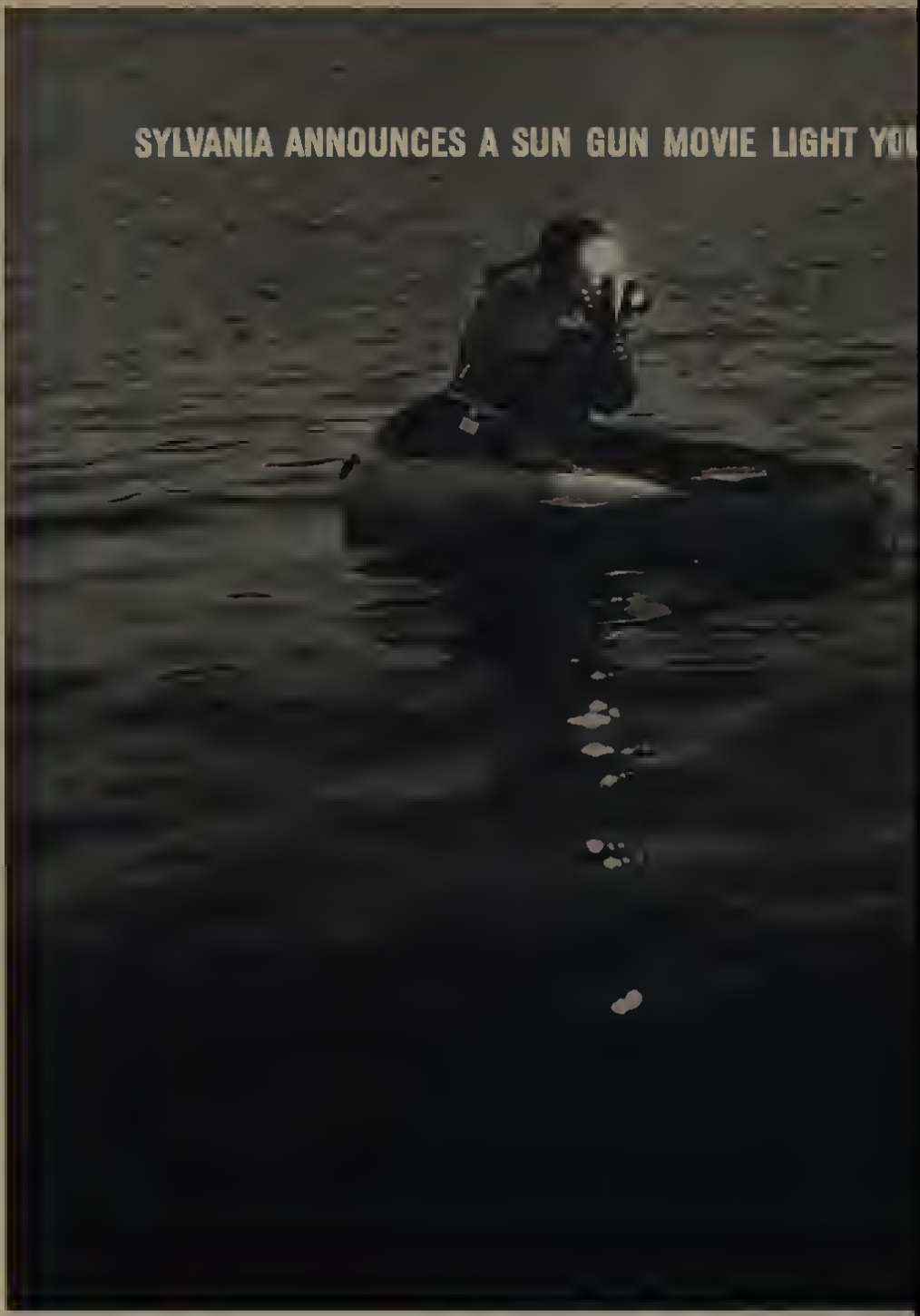
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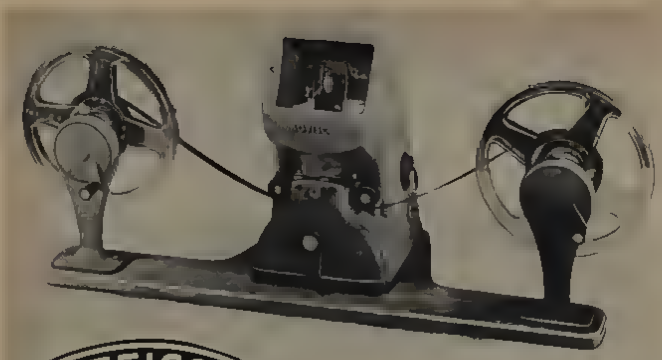

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INDUSTRY NEWS

NEWS BRIEFS OF THE HOLLYWOOD FILM INDUSTRY

Ultra-widescreen Films Adapted For Television

To date, more than two dozen feature films produced in Panavision or CinemaScope have been reprinted for showing on television. One example is "There's No Business Like Show Business" televised nationally recently, which was produced not so many years ago by MGM and photographed in color and CinemaScope.

The picture reportedly was processed for television by MGM's laboratory, and Technicolor laboratories are said to be processing other C-Scope pictures for telecasting, using an extraction system developed by Panavision, Inc. The special optics of the system is said to produce better TV images because it compensates for some of the distortions inherent in the curved tubes of TV receivers. Also, that the 63% greater negative area of the Panavision photographic process over the 1-to-1.85 photography results in a finer black-and-white TV picture.

•

A Plug For Lindon, A Veto For Color

John Frankenheimer, who will direct the upcoming "The Manchurian Candidate," starring Frank Sinatra, will photograph it in black-and-white with Lionel Lindon, ASC, behind the camera. Frankenheimer is strong for B&W, thinks color ruins good drama, according to a recent article in the New York Times.

"Mr. Frankenheimer," the article reports, "prefers to work with the same cinematographer—Lionel Lindon who won an Oscar for his camera work on "Around The World In 80 Days."

" 'The director,' Mr. Frankenheimer insists, 'must be in complete empathy with the cameraman. The relationship between the director and the cameraman is at least as important as the relationship between the director and the actors. Lionel Lindon's contribution to my pictures is immense. He thinks as I do about the use of black-and-white film to express realism and other dra-

Continued on Page 642

feature-for-feature there's nothing to compare with

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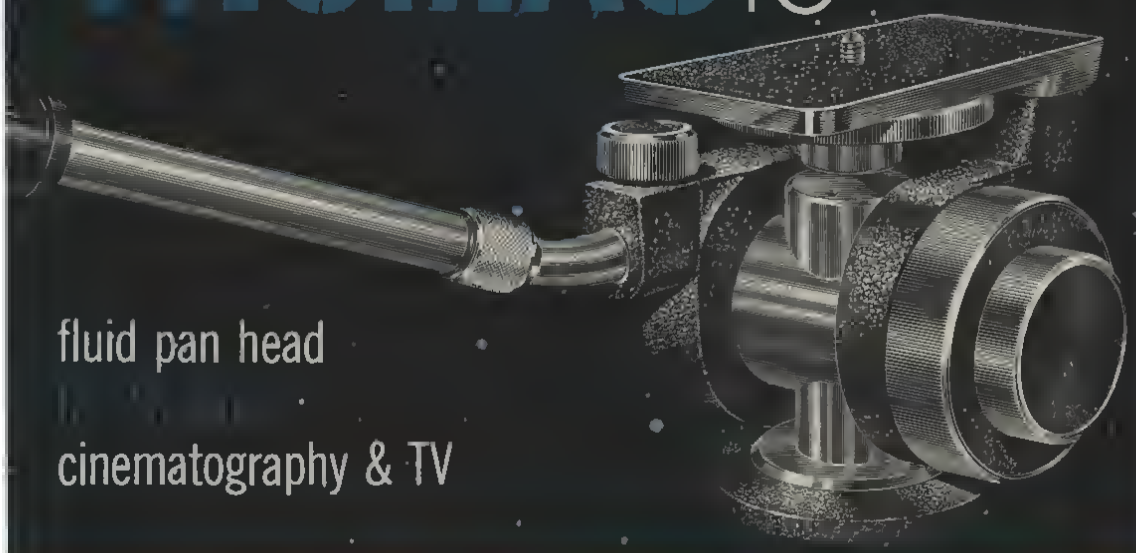

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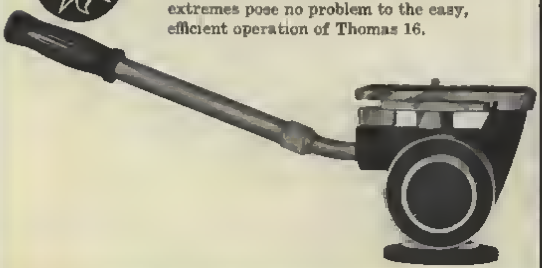

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INDUSTRY NEWS

Continued from Page 639

matic values in movies'" Lindon photographed Frankenheimer's "All Fall Down"

•

Joe Vidala of NBC News "Cameraman Of The Year"

Joe Vadala of NBC News has been named "Bolex Cameraman of the Year" in recognition of his outstanding 16mm movie photography during 1961.

The award, a Bolex Rex 16mm movie camera with Pan-Cinor 85mm zoom lens, was presented to Vadala by Hans Stauder, president of Paillard Inc., U. S. distributor of Bolex 8mm and 16mm movie equipment. The camera bears a silver plate engraved with the recipient's name.

Vadala, who joined the NBC News staff as a cameraman in 1948, has shot news films in many parts of the world. He photographed the "Rome Eternal" series in 1957 and the following year made several films for NBC-TV in the Holy Land.

Cited as "Newsfilm Cameraman of the Year" by the National Press Photographers Association in 1960, he also won a Christopher Award for his camera work on "Way of the Cross."

"Way of the Cross," which is telecast in color each year at Easter by NBC-TV, was photographed by Vadala in Jerusalem and Jordan with a 16mm Bolex, four Switar lenses and a Pan-Cinor zoom lens.

•

Florman & Babb Opens New Rental-Service Dept.

Florman & Babb, Inc., a leading New York manufacturer and distributor of motion picture production equipment, last month opened its newly-expanded Rental & Service Department in recently-acquired quarters at 304 West 54th St., New York City. Personnel of the new department includes John Babb, V-p of the company; Dom Notto, chief engineer; Hy Roth, rentals; George Berrios and Herman Parkoff, camera dept.; John Murray, lighting and grip equip.; Bill Egri, machine shop; Bob Montalvo, Moviola dept.; and Bernie Zuch, audio dept.

The company's sales offices and showrooms remain at 68 West 45th St., and are presently undergoing re decoration. ■

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WHAT'S NEW

IN EQUIPMENT, ACCESSORIES, SERVICES

Sound-proof Barney

Birns & Sawyer Cine Equip Co., 6124 Santa Monica Blvd., Hollywood 38, Calif. announces a sound proof barney for the new Eastman Kodak Reflex 16 camera. Accessory is also available with built-in heater. Externally, the barney is white in color to minimize heat absorption from sun when used out of doors. A velcro-closure on right-hand side affords easy access to camera controls. List price is $124.50, with heater, $184.00.

Backwind On Bolex "B"

The Bolex D8L 8mm roll-film loading cine camera now features a film backwind device that permits making lap-dissolves and double exposures. In addition, the camera features speeds ranging from 12 to 64 fps, automatic footage counter, audible signal at end of film, single-frame exposure, cable release socket, and variable viewfinder.

30-Volt Sun Gun

Sylvania Electric Products, Inc., announces a new 30-volt Sun Gun which operates from a lightweight nickel cadmium battery pack. This portable photographic floodlight for movie and still photography, utilizes a halogen lamp in a 2¾" reflector and may be operated continuously for a 32 minute period with an output of 20,000 center beam candlepower before recharging of battery pack is required.

The light is balanced for 3400° K, permitting use with Type A color film without filters. Power pack is plugged into 110 V AC current for recharging.

Duplex Film Processor

A new processing machine which permits simultaneous processing of both 35mm and 16mm, and double 8mm new type Kodachrome II film in a common tank system is announced by Arriflex Corp. of America, 257 Park Ave., South, New York 10, N. Y. Separate drive and rack systems permit any of the above film sizes to be developed simultaneously or separately. Optional output capacity provides for speeds of 90 ft. per min. for 16mm and double 8mm, and 12 ft. per min. for 35mm; or 70 f.p.m. for 16mm 8/8mm and 17½ ft. per min. for 35mm. Complete specification sheet on the equipment is available from the company.

Lightweight Recorder

Weighing but 12 lbs. and providing 400-ft. tape capacity, is the Nomad Mark II magnetic tape recorder-reproducer for professional use, manufactured by Magnasync Corporation, 5546 Satsuma Ave., No. Hollywood, Calif. Completely self-contained, its solid state circuitry combines ruggedness with operating economy. Features include instantaneous "film direct" monitoring, forward and reverse operation, rewind, and rechargeable battery with built-in charger. The Nomad records a 200 mil track on split 16mm Nomad magnetic film. About $985.00.

Continued on Page 647

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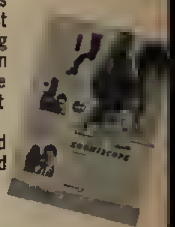
The Auricon Zoomiscope Model 85 for the Pan-Cinor "85" Zoom Lens provides eye-relief by moving the Camera Operator's eye-position almost two inches away from the side-door of the Auricon camera, while using the Pan-Cinor "85" Zoom Lens. Mounts (without the use of tools) on any Pan-Cinor "85" or "85 S-EK" Zoom Lens View-finder, in place of the regular Pan-Cinor "straight-back" Eye-Piece. Auricon Zoomiscope list price $97.40 for Model 85.

Write for free illustrated information on the Auricon Zoomiscope and details covering custom modification of Pan-Cinor Model "85" and "85 S-EK" to fit your Auricon camera. Write to...



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The BACH Auricon Line
AURICON the Professional Camera

Joe Vadala, named Newsfilm Cameraman of the Year by NPPA, sets up his Bolex in a Jerusalem street to get "establishing shots" for the documentary, "Way of the Cross." After seven weeks on location, Vadala said of Bolex, "A beautifully made piece of equipment."

Vadala moves in close as he shoots Franciscan fathers carrying the cross in the award winning epic for NBC News. Viewing and focusing through the Bolex taking lens while shooting, he obtained the most complicated effects with precision.

How NBC News used Bolex to shoot prize winning film

Mountain climbing is all work. And when the climb is to film cloud effects and waterfalls, the cameraman wants a camera that is lightweight, compact and rugged. He wants a Bolex. "You don't need five men," Vadala said, "and you can set it as you climb."

Casting nets on the Sea of Galilee was a vital part of the film story and the scene was shot at various speeds to get the desired result. With a Bolex, speeds can be adjusted from 12 to 64 fps and can be reset while the camera is running.

Temperature extremes may mean discomfort for the cameraman but can't be allowed to interrupt the job at hand. Bolex is unaffected by heat and cold and for that reason it has become a favorite among newsmen, explorers and scientists.

Film narratives of this scope call for hundreds of detail shots, dissolves and zooms that can be cut into the story in the final editing. This is why Prize Winner Vadala chose the versatile Bolex

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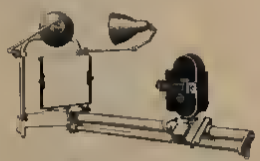
For Every Professional Effect

Bolex Tripod Lightweight aluminum construction. Smooth action pan head with spirit level tilts 135 degrees vertically Nonskid legs. $99 50

Bolex Unimotor Motor drives camera through full roll of film at constant speed Batteries or AC current $89.50

Precision-Ground Bolex Lenses Switar 10mm f/1 6 wide angle $149 50. Switar 25mm f/1 4 normal lens, $168 00. Switar 75mm f/1 9 fast telephoto $145 00.



Bolex 16mm Titler Basic kit—optical bench main frame reflectors title frame and cradle, $180 50

The Bolex H-16 Rex with reflex viewing, variable shutter, 3 lens turret and Lytar f/1 8 lens costs only $450 00. Workmanship for all Bolex equipment is to the most precise tolerances on the 16mm market. Bolex lenses are matched for uniform sharpness, exposure and color rendition. Bolex cameras and accessories offer the professional utility many studios have paid thousands of dollars for. Write Dept BAC-11 for literature and the name of your nearest Bolex dealer.

All prices include F E T where applicable

BOLEX

PAILLARD Incorporated 100 Sixth Avenue New York 13 N Y

WHAT'S NEW

Continued from Page 644

Conelites

Mole-Richardson Co, 937 No Sycamore Ave, Hollywood 38, Calif., has added three new Conelites to its line of professional motion picture lighting equipment. The lamps are all of the same general appearance as the 1000/2000-watt Junior size pictured above. Other sizes accommodate 500- or 750-watt globes, and 5000-watt globes

35mm Action Viewer

The S.O.S. Ediola Pro-35 action viewer is a precision optical instrument designed for easy editing of 35mm film. Features include bright picture image on 4⅜"x6-1/16" screen, 75 W air-cooled lamp, simplified framing and focusing, velvet-smooth Nylon rollers and free-turning sprocket guard. About $395 00 from S O S. Photo-Cine-Optics, Inc, 602 West 52nd St, New York 19, N Y

Zoom-finder Eye-piece

The Auricon Zoomiscope provides eye relief for operators filming with Pan-Cinor "85" for "85 S-EK" zoom lenses, by moving the camera operator's eye position almost two inches away from the side-door of the Auricon camera. Accessory mounts without use of tools on any Pan-Cinor "85" or "85 S-EK" zoom lens viewfinder, in place of the usual straight-back eyepiece. About $87 40 for the model 85. Bach-Auricon, Inc, 6902 Romaine St., Hollywood 38, Calif

Versa Crane

An aluminum camera crane, ideally suited to needs of industrial and in-plant film units, features adjustable camera position from 18" to 96". Trade named Versa Crane, unit offers 360° boom rotation, and will support heavy 35mm cameras Complete unit, $995 00 S O S Photo Cine-Optics, Inc., 602 West 52nd St., New York 19, N. Y.

Mood and Bridge Music

A special selection of marches suitable for theatrical and TV film productions, is newest supplement to the library of mood and bridge music by H-R Productions, Inc, 17 East 45th St., New York 17, N Y. Recorded with a concert orchestra, each march is approximately three minutes in duration, and reflects a variety of moods in motion.

Maviscop Viewer

Carl Zeiss, Inc., New York, announces it has stepped up deliveries from West Germany of Zeiss Ikon Moviscop editors for 8 mm and 16mm films. Equipment boasts ease of operation, does not wear or damage film, and a bright screen image that makes possible using the Moviscop in brightly lit rooms. Unit includes baseboard and rewinds for reels up to 800 ft capacity, plus facility for marking film for cutting.

ColorTran Remote Control

The ColorTran Remote Control Module is designed for use with Color-Tran Cinemaster Mark II or Cinemaster Chief Mark II converters to provide full remote control of individual lighting circuits. Unit affords fingertip

Continued on Page 694

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News briefs about the A.S.C., its members, and important industry personalities

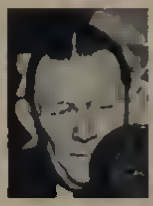
FAWLEY—Rodger J. Ross (R) guest speaker at the ASC's October dinner-meeting answers questions of Walter Beyer (L) while ASC President Hal Daniels listens. Ross who is Supervisor of Technical Film operations for Canadian Broadcasting Co. addressed ASC members on subject of "Lining the Motion Picture Camera With the Television Transmission System." Ross stressed importance of white and black references in scenes for TV films, recommended cameramen use a brightness spot meter for measuring such references.

NEW CAMERA—On display at the ASC's clubhouse during the Society's October dinner-meeting was Eastman Kodak's new Ektra 16 motion picture camera—shown here being demonstrated by E-K's Roy Grant (far right) to (L to R) George Mitchell, Ernest Haller, and Stanley Cortez.

PAUL EAGLER ASC

PAUL EAGLER, veteran member of the American Society of Cinematographers, died September 30th following a brief illness. He was a specialist in background projection and special effects and for several years had been associated with Bob Hoosend ASC, servicing independent Hollywood film producers. He won an Academy Award in 1948 for the special effects for "The Portrait of Jenny."

LEN BOOS ASC died of a heart attack at his home in Burbank, California October 31. A veteran cinematographer who had traveled and photographed in many lands, Boos was active in the development of the first motion picture sound recording equipment. He later founded Kinevox, Inc. which company marketed one of the first magnetic recorders for sound motion picture production.



LEN BOOS, ASC

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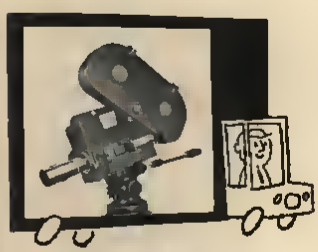

New WADOELL NIGH SPEED 16MM CAMERA. A flexible high speed camera with speed range fmm 3 to 30,000 pps. Ideal for data recording. WADOELL Ultra Nigh Speed Streak Camera also available

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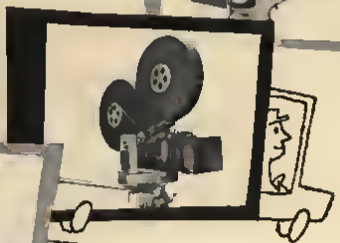

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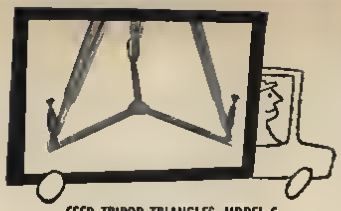

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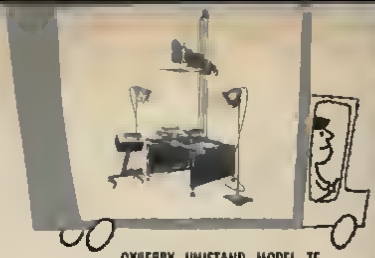

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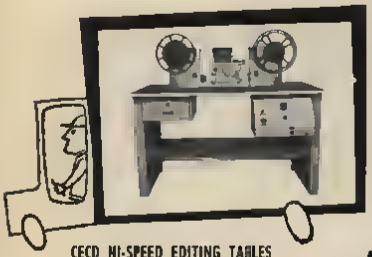

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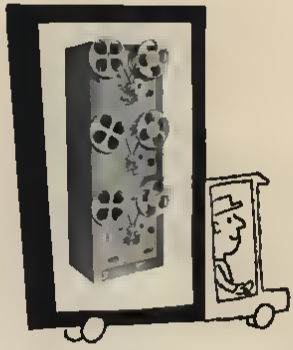

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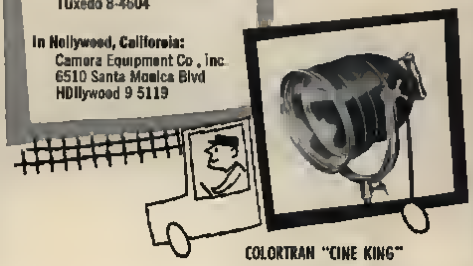

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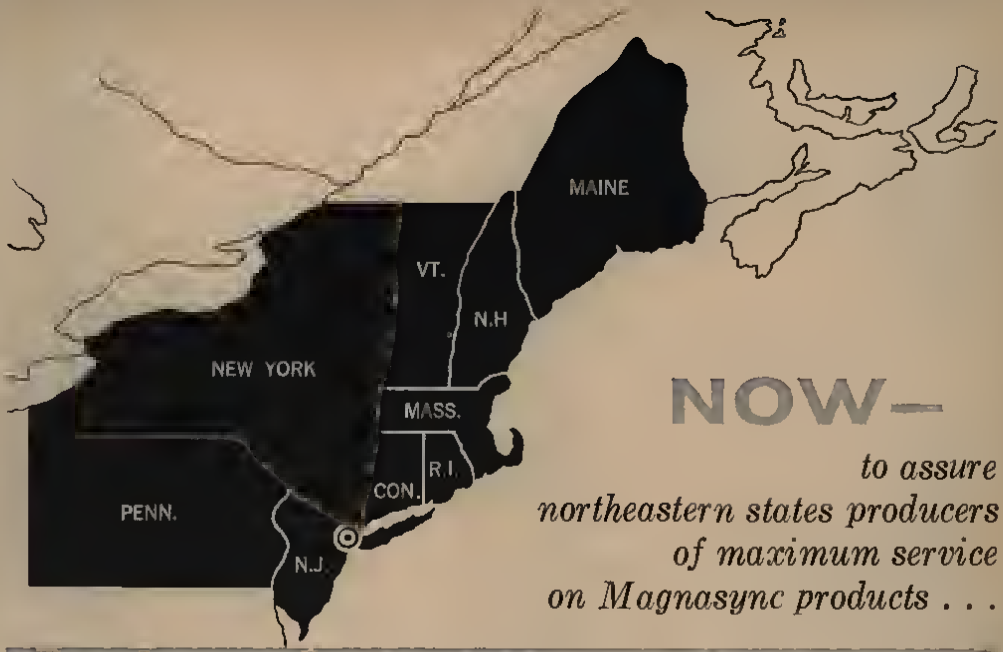

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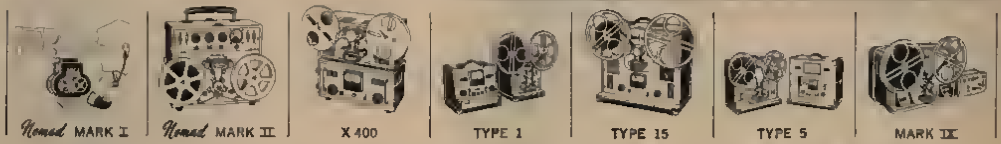

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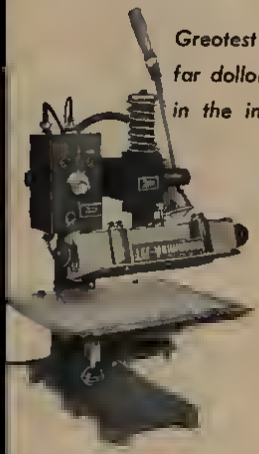

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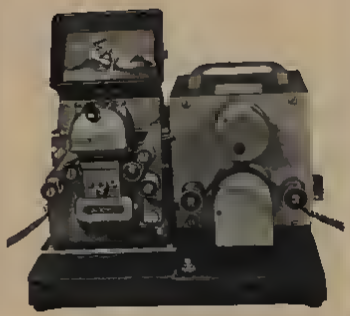

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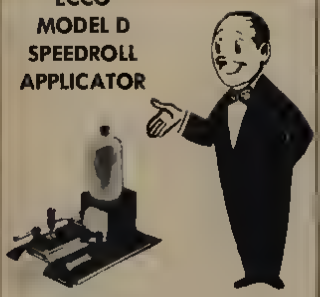

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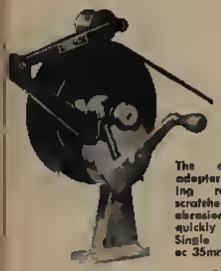

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Q & A

Technical Questions and Answers

Q.—*I am considering using PAR-type photo-lamps with stepped up voltage on the order of the ColorTran system. Can you give me an approximate formula for relating the applied voltage and the resultant color temperature of such lamps?*—A.H.C., Denver, Colo

A.—Karl Freund, ASC, answered a similar question some time ago for another reader. Therefore we shall give you his somewhat technical explanation, as printed in an earlier issue:

Color temperature is a function of the square root of the applied voltage. Over a two-to-one change in voltage, it can be represented by the equation:

$$\text{Color temperature. } Tc = C_1 \sqrt{\frac{}{V - C_2 + C_3}}$$

where C_1, C_2, C_3 are constants. Since C_1 is small (in order of 2×10^3—) and C_3 is large (around 10^3), the effect on the color temperature is much less than being directly as the square root of the voltage. C_2 may be around 8, producing only a slight offset in the position of the curve. The particular values of these constants will be different for different lamps. However, if they are determined for a particular lamp from three readings, the formula can be used to determine the color temperature at intervening voltages to an accuracy around 15° K.

Q.—*Isn't backlight an important factor to be considered when taking a meter reading of a scene on a sound stage? If so, must this particular light source be read separately?* H.A.R., San Francisco.

A.—There is some backlight in almost every scene—indoors or out. On the sound stage, backlight from set lamps is invariably used for separation.

Where a reflected light meter is used to determine the exposure in such instances, difficulties can be encountered because the backlight strikes the cell of the meter directly, overriding the comparatively weaker illumination reflected from foreground objects in the scene.

Where an incident light meter is used to determine exposure for similar scenes, this problem is avoided because the meter is held close to the subject, with the hemisphere light collector of the meter aimed to read the light *falling on the camera side* of the subject, which includes the backlight. Such readings will be more dependable because the hemisphere light collector is sensitive to all light falling on the side of the subject which is observable from the camera position—and this includes the backlight, which will register on the hemisphere in the correct proportion.

Q.—*Is there some method by which one may judge color balance, brilliance and contrast in scenes being photographed with color film, much the same as we do with a monochromatic filter in black-and-white photography?* —G. N., Bangalore, India.

A.—In color photography, the cameraman usually judges the color balance and contrast in a scene with the eye, without the aid of a filter or viewing glass. This is because colors have their own density and contrasts—entirely visible to the eye without the need for any kind of viewing glass.

A monochrome viewing glass is used to determine tonal contrasts in scenes photographed in black-and-white because it becomes necessary to translate the colors in the scene into monochrome values.

Q.—*To obtain the maximum depth of field in multiplane animation photography, what is the best lens to use?* —J. A. McW., Cincinnati, Ohio.

A.—Any good quality lens can be used. The desired depth of field is achieved by using illumination of sufficient volume and an exposure interval of proper duration that will permit stopping down the lens to provide the maximum depth of field. ■

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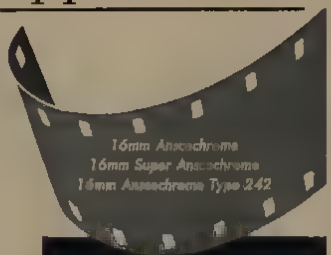

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BEHIND THE CAMERAS

WHAT THE INDUSTRY'S CINEMATOGRAPHERS ARE SHOOTING LAST MONTH

By MARION GUGHINS

NOTE: Asterisks following titles indicate television film productions.

ALLIED ARTISTS

JOSEPH BIROC, ASC, "Confessions of an Opium Eater" with Vincent Price and Linda Ho. Albert Zugsmith, director.

CASCADE PICTURES

HENRY SHARP, ASC, Commercials*

ELWOOD BREDELL, ASC, Commercials*.

ROY SHAWRIGHT, Commercials*.

COLUMBIA STUDIOS

WILKIE COOPER, "Jason and the Golden Fleece" (Super Dynamation & Color, Morningside World Wide Prods., shooting in Italy) with Todd Armstrong and Nancy Kovack. Don Chaffey, director.

BOB HUKE, "The War Lover" (Arthur Hornblow Prod., shooting in England) with Steve McQueen and Robert Wagner. Philip Leacock, director.

CHARLES WELBORN, "Dennis the Menace"*

FRED GATELY, ASC, "Hazel"*

JACK MARTA, IRVING LIPPMAN, "Route 66"*

PHILIP LATHROP, ASC, "Experiment in Terror" (Geoffrey Kate prod., shooting in San Francisco) with Glenn Ford and Lee Remick; Blake Edwards, producer-director.

PHILIP TANNURA, ASC, "Shannon"*.

GERT ANDERSEN, ASC, "Donna Reed Show"*

ALDO TONTI, "Barabas" (Technirama 70 & Technicolor, Dino De Laurentis Prods.; shooting in Italy) with Anthony Quinn and Silvano Mangano. Richard Fleischer, director.

CHRIS CHALLIS, "The Mutineers" (C'Scope & Color, G. W. Films, Ltd., shooting in Spain) with Alec Guinness and Dirk Bogarde. Lewis Gilbert, director.

GIUSEPPE AQUARI, "Conga Vivo" (Dino de Laurentiis Prods., shooting in the Congo) with Jean Seberg and Gabriele Ferzetti. Giuseppe Benati, director.

DESILU—Cahuenga Studios

ROBERT DE GRASSE, ASC, "Dick VanDyke Show"*, "Danny Thomas Show"*.

SID HICKOX, ASC, "The Andy Griffith Show"*

HENRY CRONJAGER, "Joey Bishop Show"*

DESILU—Culver City

CHARLES STRAUMER, "The Untouchables"*

LOTHROP WORTH, ASC, "The Real McCoys"*

DESILU—Gower Studios

WILLIAM SKALL, ASC, "Window on Main Street"*.

CHARLES VAN ENGER, ASC, "Lassie"*

TED VOIGHTLANDER, "Ben Casey"*.

ROBERT PLANCK, ASC, "My Three Sons"*

EDWARD FITZGERALD, ASC, "Straightaway"*

JERRY FAIRBANKS STUDIOS

RAY FOSTER, ASC, Commercials*

FOX WESTERN AVENUE

JAMES VAN TREES, ASC, "Dobbie Gillis"*

ROBERT HAUSER, "Bus Stop"*

RICHARD RAWLINGS, "Margie"*

FILMWAYS STUDIOS—New York

MORRIS HARTZBAND, "The Defenders"* (CBS) Boris Sagal and Buzz Kulich, directors.

GENERAL SERVICE STUDIOS

THOMAS TUTWILER, ASC, "International Golf Show"*

ROBERT MORENO, "Adventures of Ozzie & Harriet"*

ROBERT HAGER, "Perry Mason"*.

AACH DALZELL, "Mister Ed"*

HARRY WOLF, "Hennessey"*.

GOLDWYN STUDIOS

MEREDITH NICHOLSON, "The New Breed"*.

INDEPENDENT

JOE MACDONALD, ASC, "Taras Bulba" (Harold Hecht Prod. for UA release, shooting in Salta, Argentina) with Tony Curtis and Yul Brynner. J. Lee Thompson, director.

WILLIAM STORZ, ASC, "Candid Camera Show"*; Commercials*

JACK HILDYARD, "The Road to Hong Kong" (Melnor Prod., UA release, shooting in London) with Bing Crosby, Bob Hope and Joan Collins. Norman Panama, director.

TED MCCORD, ASC, "Smog" with Fabio Maria Salerno and Annie Giradot. Franco Rossi, director.

SAM LEAVITT, ASC, "Advise and Consent" (Otto Preminger Prod., Columbia release, Panavision, shooting in Washington, D.C.) with Henry Fonda and Charles Laughton. Otto Preminger, producer-director.

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ALDO TONTI, "Damon and Phythias" (Color & Wide Screen, shooting in Rome) with Guy Williams and Don Burnette. Curtis Bernhardt, director.

WILLIAM DANIELS, ASC, "How the West Was Won" (MGM-Cinerama Prod., Episode 2, shooting in Colorado) with Gregory Peck and Debbie Reynolds. Henry Hathaway, director.

MILTON KRASNER, ASC, "Two Weeks in Another Town" (C'Scope & Color, shooting in Rome) with Kirk Douglas and Edw. G. Robinson. Vincente Minnelli, director.

LUCIEN ANDRIOT, ASC, "National Velvet"*

HARKNESS SMITH, "Dr. Kildare"*.

WILLIAM SPENCER, "Cain's Hundred"*

GEORGE CLEMENS, ASC, "Twilight Zone"*

ROBERT PITTACK, ASC, "Father of the Bride"*

Continued on Page 693

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LIGHTING TECHNIQUES that are both effective and artistic are exemplified in the four scenes above from Universal-International's "Back Street" starring Susan Hayward and John Gavin and photographed by Stanley Cortez, ASC. Here may be seen how light and shadow skillfully integrated in each scene, enhance its visual and dramatic impact. Backgrounds, on which illumination is purposely subdued, become effective but non-diverting backdrops for the players.

THE PHOTOGRAPHY OF "BACK STREET"

Some imaginative techniques effectively enhance the storytelling.

By HERB A. LIGHTMAN

FILM PRODUCTIONS that include spectacles such as chariot races, giant sea battles, towering sets or casts of thousands undeniably present special challenges to the cinematographer as well as afford him opportunities for striking camera work.

It is rarely, however, that a film not of the extravaganza type offers this combination of challenge and opportunity. An exception is the latest filmization of Fannie Hurst's durable romantic drama, "Back Street," photographed in color by Stanley Cortez, ASC.

The story, having been filmed twice before, is a familiar one. Updated to begin with World War II, it is the bittersweet tale of illicit romance between a struggling fashion designer (Susan Hayward) and a dashing young Air Force officer (John Gavin) who, as it turns out, is married to a drunken virago of a wife who obstinately refuses to give him a

divorce. The ill-starred lovers part temporarily. Then, after the designer has climbed to the top in the fashion field, they meet again—first in New York and then in Rome. Unable to dignify their love legally, they plunge into a "back street" type of liaison which continues over a period of years until, finally, death parts them.

On the surface it would appear that this story would involve few technical problems and few, if any, opportunities for creative camera work. But producer Ross Hunter mounted this production most lavishly, and moved his handsomely groomed players against glamorous backgrounds and exotic foreign locales. Therein lay the challenge as well as the opportunity for effective photography.

" 'Back Street' is not a period epic with spectacular action or a swarm of extras," Cortez points out. "It is, instead, a tender love story concentrating mainly on two people. In the photography, therefore, I endeavored to create visual emotional impact. I wanted the photography to show not only the physical facades of the characters, but what was going on in their minds, hearts and souls. This had to be done without obvious photographic tricks, extreme camera angles or weird lighting."

Cortez's photography accomplishes this objective with extraordinary effect, drawing the audience intimately into the emotion of the story while at no time making it conscious of the camera. Nevertheless, the plot presented many photographic problems. Much of the story action, for example, takes place in a number of far-flung locales: Lincoln, Nebraska; New York, Rome, Paris, the Italian Riviera and the French countryside. The trick was to get full value out of these picturesque locations without sending the entire company halfway around the world.

Location Shots Matched

To achieve this aim, second unit camera crews photographed establishing shots in distant New York's Fifth Avenue, the Champs Elysees in Paris, and in various pictorial areas of Rome. When the principals players were to appear in these scenes, they were played by doubles skillfully photographed from the back or side in long shots so that their faces would not be recognized. Segments of these areas were later reproduced in exact detail on the Universal-International back lot, so that closer shots involving the actual principals could be photographed to match. So skillfully was the lighting and general photographic style of the second unit scenes duplicated here that they could be directly intercut with the location footage without the slightest apparent difference in photographic mood. This technique, of course, is not new—but any discrepancy (especially in color photography) is usually quite evident to the practiced eye, forcing the editor to use dissolves and cutaways to hide glaring differences in photographic quality.

In one sequence Miss Hayward is shown strolling down Fifth Avenue in New York. John Gavin spies her in the crowd and rushes to her side as she pauses to look in a shop window. The camera shooting into the window cuts to a medium shot showing the two players reflected in it—as well as the sidewalk crowds, traffic and buildings on the other side of the street.

Problem of Reflection

To photograph the medium shot in the studio to match the establishing shot filmed in New York, a duplicate of the store front complete with plate glass windows was erected on the studio lot. Opposite the window was placed a huge rear-projection process screen on which was projected a process plate of a scene photographed on Fifth Avenue, New York. One of the technical problems here was to get this scene to reflect strongly enough in the shop window to suggest realistically the reflection of a brightly sunlit exterior. Because the image from a single process projector was not strong enough, the problem was solved by making three identical prints of the same scene and projecting them, one over the other, in exact register on the process screen by means of a triple-head projector.

The problem was further complicated by the necessity of getting a sharp split-focus between the players and the process image. Since it is a law

Continued on Next Page

LINING UP CAMERA for an over the shoulder shot for closing sequence of picture. Director of Photography Stanley Cortez stands directly behind Susan Hayward and next to camera as it is being moved into place for the shot.

SUSAN HAYWARD arrives too late, finds airport gate closed, watches plane (out of picture) bearing sweetheart take off without her. Note how large scrim is used here to diffuse sunlight falling on the actress

of optics that a reflected image, in order to be sharp, must be focused at a point *twice* the distance from the subject to the reflective surface, the difficulty involving depth-of-field was magnified in geometric ratio. Added to this was the struggle for a delicate balance of light intensity and color temperature between the various elements and planes of the scene. The fact that the final scene appears effortlessly simple, clear and completely realistic on the screen, is evidence of the tremendous amount of effort and skill often required to photograph a seemingly simple scene.

The Locations

Exteriors of a French farmhouse, supposedly buried away in the countryside outside Paris, were filmed at the Rowland V. Lee Ranch several miles north of Hollywood. A small house already erected on the property and fronting a picturesque lake was expanded, re-faced with field stone and completely revamped to suggest a typical French country house. In order to indicate a change of seasons, the natural fall foliage was first "dressed" with artificial frost and snow. Then the area was replanted with blooming spring foliage. Matching interiors of this farmhouse were constructed on a stage at the studio.

Another important location trip was made to Carmel, a picturesque artists' colony located on a spectacular stretch of rugged coastline several hundred miles north of Hollywood. Here a breathtaking location had been selected which featured a lovely, rock-hewn cottage perched on a rugged cliff several hundred feet above a boulder-strewn beach pounded by giant breakers. The locale was supposedly that of a weekend love nest somewhere on the Italian Riviera.

The opening shot of this sequence was fraught with technical difficulties. It begins with an interior scene (actually filmed inside the house) and the camera then follows a player out of the house and onto the terrace—after which the camera continues to pan and tilt down to a powerfully scenic shot of the breakers crashing against the rocks below.

The primary problem here was one of lighting. It was necessary to balance the light of the interior of the house in intensity and color temperature with that of the exterior—no small feat, considering that both areas were shown in a continuous shot and that filming was done on a bright, sunlit day. The daylight coming through the windows had to be controlled and carefully goboed. At the same time, artificial light, precisely balanced for color temperature, had to be used to build up the general light level and fill the shadows.

With the lighting problem solved, there remained the challenge of executing a complicated follow shot on the edge of a cliff with no place to lay dolly tracks or place equipment. The grip crew built a wooden platform, cantilevered in space, off the side of the cliff. From this perilous vantage point the scene was photographed.

Other locations involved trips to Monterey and Salinas, California where local airports were disguised and photographed to duplicate those of Rome and Paris. In the latter location, filming was held

Continued on Page 685

HIGHLY mobile crab dolly is used here in filming action on New York street for "Back Street." Panels of plywood cover sidewalk to provide smooth surface for movement of dolly

Production HEADACHES?

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Helivision—A Systen

By JOE HENRY

THIS IS HELIVISION—minus the helicopter in which it is customarily mounted. Seat for camera operator swivels in the sturdy metal base. The gonlry supports the gyro stabilizer and the mount for the camera. Designed to accommodate a wide range of both 16mm and 35mm cameras, one shown here is a Cameflex with meter driven zoom lens

THE HELIVISION system mounted in a French Alouette II helicopter. The camera itself is cushioned from the craft's natural vibration by unique gyro stabilizer incorporated in the camera mount

DURING THE COURSE of photographing his memorable, prize-winning color film, "The Red Balloon," Albert Lamorisse encountered a problem which at the time appeared insoluble. The shooting script specified that the child starring in the film be carried away by the massed balloons, seen in the closing scenes of the picture, soar over France and land in Africa. Obviously, this called for a means of following the slowly soaring balloons in flight with the camera. Despite the technical resources available, Lamorisse was obliged to dispense with this sequence in the film.

Following the completion of "The Red Balloon," he spent the next two years in research and fruitless trials and experiments in an effort to perfect a means of vibrationless aerial photography that would enable the camera to travel—or appear to have traveled—at a leisurely pace comparable to that of a balloon instead of the rapid linear rate of conventional aircraft. For Lamorisse now had another film story about a balloon he wished to produce.

He took his problem to Mr. Vivie, General Secretary of the Supreme Technical Committee for the Cinema, in Paris, who put him in touch with a French engineer, Mr. Fieux, a leading specialist in marine gyroscopes. Within a very short time, Fieux solved the problem, and at the same time had developed and patented an anti-vibratory system called Helivision.

Equipped now with a unique "flying camera," Lamorisse completed the photography of "Le Voyage En Balloon" (The Trip In A Balloon) and, for probably the first time anywhere, photographed aerial scenes from angles that never before had been seen on the screen: the flight of storks, the hunt, sailing ships, the flight of pink flamingoes—which are highlights of his film. Even scenes and subjects which most people consider familiar if not commonplace are presented in new and interesting aspects, thanks to the Helivision photographic system

Of Aerial Photography With Zoom Effects

French cinema engineers have developed unique method for photographing spectacular action shots from the air with a gyro-stabilized camera mounted in a helicopter.

scenes such as the Chateau de Chenonceaux, the Alps, Eiffel Tower, etc.

Despite the enthusiasm which greeted his aerial sequences for "The Trip In A Balloon" in the early stages of the film's production, Lamorisse wished to extend the scope of Helivision so that he could film his characters in closeups during flights of the helicopter, in which the camera and Helivision equipment were mounted. But the downdraft from the helicopter, when operating close to the ground or a water surface, made the filming of satisfactory closeups impossible. Lamorisse tried using telephoto lenses for shooting closeups from the air, but the craft's vibration became an unsurmountable problem. This led to further research and experiments.

Ultimately, engineers working on the problem succeeded in perfecting the system that is used at present, which enables a cameraman to make aerial shots from a helicopter with a camera fitted with a vari-focal lens. Helivision thus became not only an ideal method for filming aerial shots, but also provides a sort of aerial camera crane for making traveling shots free of all constraints, and a scope of picture format ranging from closeups to immense background views.

Basis of the Helivision system is the equipment pictured at the top of opposite page. It consists of a solid steel base on which is mounted a swiveling seat for the camera operator, complete with quick-release parachute type harness, and an upright or gantry that supports the camera mounting and the gyro stabilizer, which may be considered the key component of the system. This complete unit is set up in a helicopter, as shown in the photo, and the craft becomes an integral unit of the system, providing as it does both the transport for the camera and a means of augmenting the zoom effects of the varifocal lens.

Continued on Page 689

THE 'COPTER borne Helivision camera is shown at left in course of photographing action of a lone horseman running on a beach. Photos below are reproductions of random film clips taken from the sequence in which the varifocal lens was augmented by movement of the helicopter to produce a striking zoom effect of extreme scope

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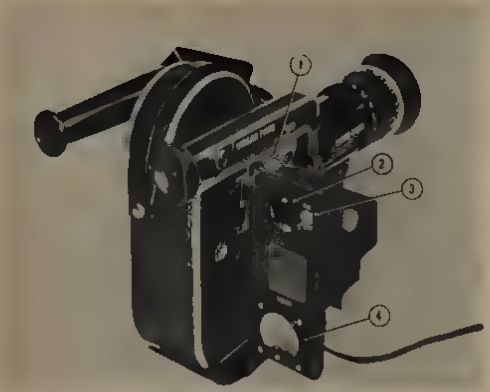

FIG 1—Small instrument panel, attached to rear of camera motor contains dual-control switch 3 for motor and recorder plus voltage regulator 2 for battery power. Jack receptacle for recorder power cable is at 1, the voltmeter at 4

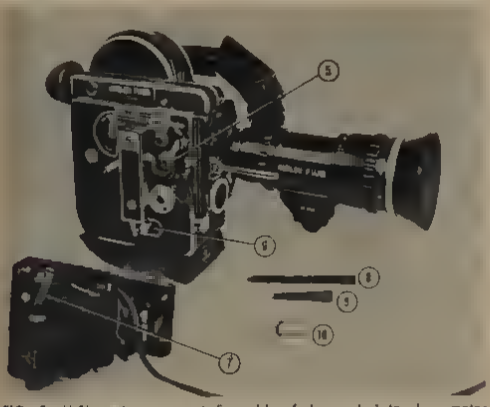

FIG 2—U Shaped component 5 enables feder control to clear motor shaft. Screw head 6 is drilled and tapped to accept motor mounting screw. Length of drive shaft 7 is increased ⅜". Original zoom lens lever 8 is replaced by shorter lever 9 when camera is used with zoom lens on stand. 10 is modified cable release terminal

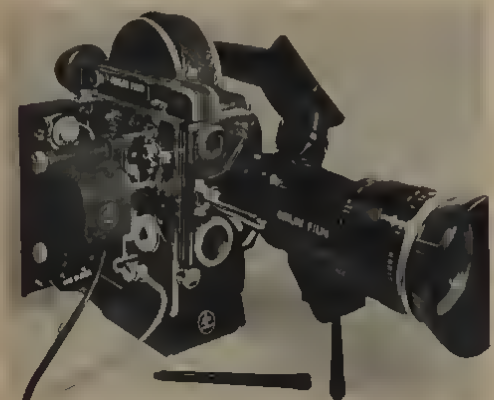

FIG 3—Three-quarter front view of author's Bolex 16mm camera, showing zoom lens with shortened lever, and motor mounted simultaneously with the Rex-O-Feder. Also shown is partial rear view of control panel attached directly to rear of motor

IT PAYS TO MODIFY

A battery pack with power reserve, plus modification of the Bolex motor mount, feder, and cable release terminal, gave us a more servicable camera for field use.

By L. W. GREENBLATT
Carlton Films, St. Louis, Mo.

WHEN PHOTOGRAPHING travelogues, documentaries, or educational films, it frequently is necessary to make shots of greater length than is permitted by the spring-motor-driven Bolex 16mm camera, which we use. To remedy this situation, we recently added a DC motor to drive the camera in areas where 110-volt 60-cycle current is unavailable.

When photographing in foreign lands, we trim our production costs by shooting as much salable footage as possible on which we can amortize traveling expenses. At first this posed a problem because the batteries required to drive the camera motor were often unavailable in foreign countries, making it necessary to carry with us ample replacements.

Normally, in the course of shooting with a battery pack, the voltage gradually drops, slowing the camera below the required 24 fps speed. This, of course, we found intolerable because much of our footage is shot with sound recorded simultaneously on tape, and it is essential that both camera and recorder speeds be maintained at the normal level to facilitate later synchronization of film and tape.

Today, whenever we travel to some remote region to shoot a large quantity of film, it is not practical to carry along a great number of replacement batteries. Our alternative is to use five or six batteries in series which provides a maximum of 30 to 36 volts output. This is reduced by means of a voltage regulating rheostat to 24 volts (which drives the camera at 24 fps) and permits us to shoot 8,000 to 10,000 feet of film and still have full 24 volts of power for

Continued on Page 682

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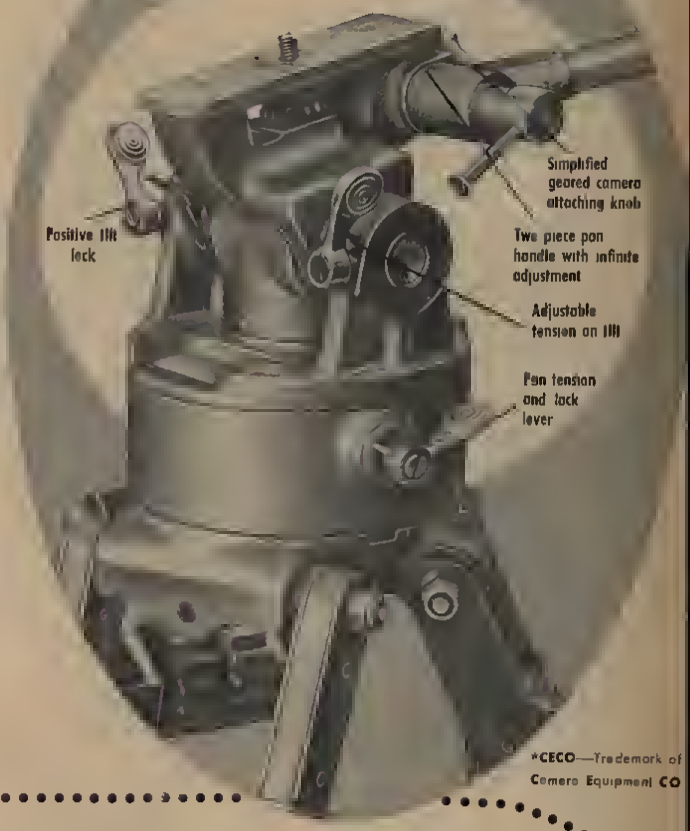
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BRUTES, powerful arc lamps such as employed in Hollywood motion picture set lighting, are used to light up rocket engine test stand at Rocketdyne's Propulsion Field Laboratory for motion picture coverage of night installation operations of company's top-rated rocket engine. Other lighting units are mounted on the stand to concentrate illumination on specific areas

Making Films With A Purpose At . . .

ROCKETDYNE

By DARRIN SCOT

"THE INDUSTRIAL cinematographer, particularly in the missiles industry, is a very special 'breed'. Even though he uses the same mechanical tools—lights, cameras, and film—used in theatrical film production, he is nevertheless as different from the major studio cinematographer as a heart specialist is from a bone surgeon. Moreover, since the respective backgrounds of these cinematographers and their training and professional aims are so different, the two are not necessarily interchangeable.

"The industrial cinematographer makes films to impress or inform a highly specialized group of 'target' audiences—each with its own exacting requirements. Thus he may pour unstinting time and effort into a film designed to be seen by only four or five key people.

"Whereas, on the Hollywood sound stage the camera is 'king' and everything else is slanted toward it, on the industrial scene the particular engineering operation under study is king and the camera must somehow find its way into the scene with-

out interfering with progress of the operation. Because of this, the industrial cinematographer must develop a quick, sure eye; the ability to think accurately on his feet, to evaluate a situation instantly and at the same time have his camera ready to shoot. His mechanical techniques must have long since become second nature, so that he will get the shot the first time— because, in most cases, a second 'take' will not be possible."

These are the views of Gerard Schaefer, Supervisor of the Documentary Motion Picture Unit of the Rocketdyne division of North American Aviation, Inc. This same philosophy is reflected in the streamlined efficiency of the unit and the impressive record of its achievements during the six years of its existence.

Its primary function is to furnish contractual motion picture reports under the company's rocket engine development programs. Its secondary function involves the production of motion pictures for personnel recruiting, public relations, proposal, briefing and promotional purposes. It has supported with technical and documentary film every major Rocketdyne contract, including those for the Navaho, Atlas, Thor, Nomad, Jupiter, Redstone, S-1, E-1, F-1, H-1, J-1, Aircraft Superperformance and other special research programs.

Progress Reports on Film

Underlying the activities of the unit is the realization that in an urgent program such as missile development, rapid, concise and accurate communication between far-flung operating personnel is absolutely essential. The industry operates on the principle of "concurrency"—that is, instead of one component being completed before the next is started, all components are developed simultaneously and eventually fitted together. The motion picture is unique in its ability to communicate the reports of such progress quickly, clearly and on many levels

Versatile Personnel

In the Rocketdyne film unit, all elements of production (human and otherwise) are utilized to fullest capacity by doubling or tripling in brass. For example, since it was found that it is impractical to divorce the procedures of writing, directing and producing, one from another, Rocketdyne's producer-writer-director has emerged a multi-faceted technician who is actually the hub of the wheel on specific film projects. The co-ordination of the project is his responsibility and he performs a staff function to that specific Program office. Thoroughly familiarized with the program from its inception, he monitors each phase of development with the eye of a technically oriented news reporter. Tests, events, milestones, and special developments must be photographed as they occur—and he will often have several camera crews shooting on several projects at

Continued on Page 687

SCOPE OF ROCKETDYNE'S film unit operations is exemplified in photos on this page. At left, cameraman Jim Berry prepares to take off for series of shots from helicopter. Above: Filming scene inside block house—nerve center of rocket engine testing activities. Below: Some Rocketdyne productions require use of stage space in Hollywood rental studios with their unlimited professional equipment

PRODUCTION CREW of Stewart Films, London, on location filming a miniature shot for 'Vixen Attack,' a technical training film. Model aircraft with 3 ft wingspan is suspended from crane where it will be blown up electrically. Prepared to shoot this brief action is a Vinten high speed camera which will film the explosion at 250 fps, using a 12-inch lens

PREPARING the aircraft miniature for the explosion scene. The two dimensional model consists of an accurate silhouette made of wood and metal and having an explosive charge attached at the rear. Although suspended by a single wire from the crane, two smaller, nearly invisible wires extending downward from either wingtip keep the model steady and also serve to carry the electric current to fire the explosive

How a simple, two-dimensional model solved the problem of producing realistic scenes of aircraft exploding in mid-air for a British

Technical Training Film

By JOHN R. F. STEWART, FRPS, MBKS

All photos reproduced by permission of the British Admiralty

THE TWIN-SEATER Sea Vixen is one of the British Navy's most important carrier-borne aircraft. Its radar and armament can locate and destroy the enemy in all weathers and at great distances.

Stewart Films, recently commissioned by the British Admiralty to produce a technical training film on the Sea Vixen weapon system, met all the usual difficulties. Shot on 35mm, there was scarcely room in the aircraft cockpit for the camera, let alone an operator. One shot was only possible by filming with the camera upside down.

One problem, however, seemed greater than all the others. The main armament of the Sea Vixen is the Firestreak, a missile which homes on to its target with deadly accuracy. Dramatically it was essential that our film should show the successful result of a Firestreak attack. But to destroy a real aircraft was not really possible on a training film budget. And the only library material available showed planes which were obsolete long before Firestreak was invented.

Obviously a miniature model was the answer, yet even in high budget feature films, model shots are often only too obvious.

Two factors helped us. First the model need only be seen for a fraction of a second before it blew up. Second, only a two-dimensional model would be required. If such a silhouette were attached to an explosive charge, suspended in the open against a genuine sky background, and then

filmed at high speed, using a telephoto lens, the result should be convincing.

Six models were made in the airfield workshops, three of wood and three of metal, and tests carried out at camera speeds ranging from 100 to 250 frames per second, using a Vinten high-speed camera.

To get the smoke from the explosion to blow towards the camera, a piston engine aircraft was stationed on the ground on the opposite side of the model from the camera to create a breeze. When we actually did the shot, however, there was a strong wind blowing

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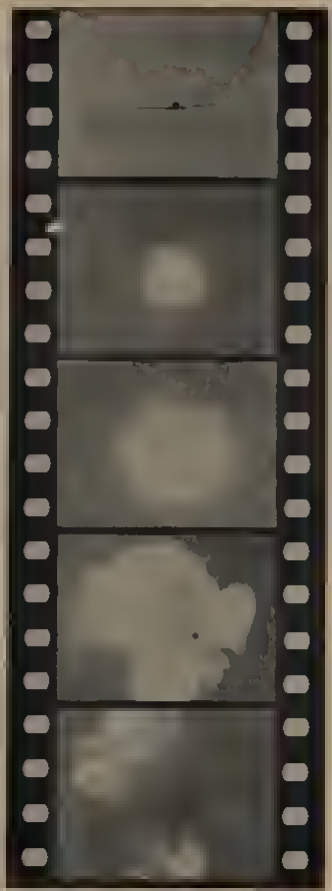

PICTORIAL RESULT of the explosion photographed at 250 fps is shown in above series of frame enlargements

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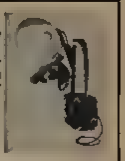

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STUDIO SET which accurately duplicates actual mine location. Here the better quality lighting afforded by studio equipment is evident, as Director Bob O'Donnell gives instructions to cast, and Cinematographer Tom Spalding (far left) prepares camera for filming scene for Gospel Films' "Dark Valley."

LIGHTING FOR PHOTOGRAPHY IN A COAL MINE

Working at 150 foot-candles, with the lens set at T4 and the camera shutter at 235 degrees, excellent negative quality was obtained in the deep underground location where important action scenes were shot for Gospel Films' "Dark Valley."

By TOM SPALDING
Director of Photography, Gospel Films, Inc.

IT WAS WITH genuine satisfaction that we viewed the excellent results obtained in photographing the coal mining scenes for "Dark Valley." We were apprehensive at first, not knowing how much the dark walls of the mine would absorb the lighting.

Shoot a color film in a coal mine?!! This was my initial reaction when the project was presented to me by Gospel Films' writer-director Bob O'Donnell. It certainly was an off-beat assignment. It was the lighting that loomed as the chief bugaboo.

Thus it was that we began one of the most interesting and at the same time difficult assignments I had ever undertaken. After the script was completed, O'Donnell and I travelled to the Ingle Coal Company mine, in Evansville, Indiana, where we were scheduled to shoot all location scenes. We looked over the premises and sized up the problems it presented.

Our first trip into the mine confirmed our expectations that photographing here would present many challenges. The average ceiling height, for example, was approximately 5 feet 8 inches, and this indicated that all lighting would have to be from the floor. We noted that the shaft where the mine car rails were laid was lighted with bare mazda lamps placed at fifty-foot intervals and fed from DC power lines. A fortunate discovery was the series of side shafts extending from the main shaft in which we could conceal lighting units to project illumination into the main shaft. There was an additional advantage to this, also. By lighting the shaft at intervals along its depth, the

various planes of illumination would improve the composition pictorially and increase the illusion of depth.

Our mode of travel for this tour of inspection was a Jeep-type mine car, which zoomed along the rails at incredible speed. Inspecting the side shafts, we found no power lines there, and that miners worked there solely by the light of their head lamps. As most of the dialog scenes in our script were scheduled to be shot in one of these side shafts, it became apparent that the most realistic illumination for our photography would be low key, in keeping with the natural darkness, with only small blobs of light here and there from the miners' headlamps.

A quick size-up of the situation presented these facts: The low ceiling not only posed lighting problems but would interfere in the handling of our camera and lighting equipment. Although there was constantly circulating air in the mine, it was loaded with fine coal dust which could damage our cameras. Because our filming could not interfere with mining operations, we were obliged to find a means of living with the noise and dust conditions. Then there was the danger that the blasting, which occurred several times a day, might damage our microphone unless properly protected. The danger from rock falls was constant, and while we could put hard hats on our crew, it would be difficult to provide similar protection for our cameras and equipment. And finally there was the psychological factor of claustrophobia—the confined area of the mine could be a very depressing spot for those not used to it, and there would be necessity for some psychological adjustment for those of us working on this assignment.

It was decided that to facilitate the easiest method of production, we would shoot all background scenes and silent montage shots on this location and do our large dialogue scenes in the studio. For sequences in the studio, we would require a set reproducing in detail and size a section of the mine shaft. We made the necessary stills in the mine and recorded the dimensions of the area, and from these our studio crew later constructed the replica set.

We next checked the available power source in the mine and found that most of it was direct current—necessary for operating the mine machinery. However, there was also a 4,400-volt line of AC current available. With the aid of transformers, we could obtain 220-volt, 60-cycle current for lighting requirements, enabling us to utilize our normal studio lighting equipment, including Color-Trans.

To provide a clean, dust-free facility for our sound recording and mixing equipment and for inspecting and re-loading our cameras, a booth with one window and a door was constructed of plywood and moved to the mine interior. Inside were removable cabinets and shelves to hold the sound gear and miscellaneous photographic equipment. Although we cleaned and re-loaded the film magazines in our nearby motel each night, it frequently was necessary to do additional loading in the mine, for which the booth served admirably.

We arrived at the mine location on a Wednesday evening, set up the equipment on Thursday and Friday, and began shooting the following Monday morning. Our crew was small by Hollywood stu-

Continued on Page 690

THE VERY PROFESSIONAL lighting which characterizes "Dark Valley" is exemplified in these photos. At left, emotion of a dramatic underground struggle is emphasized by use of strong 'kickers' in low key. To point up the depth of the mine shaft in scene above, the lighting was arranged in planes, with the illumination coming from strong lamp units placed in small side shafts branching off at either side.

The Case For The Inventor Of Motion Pictures

Despite the claims of disputants, incontrovertible records show that Thomas Alva Edison, aided by a large staff of technical assistants, developed the first practical motion pictures.

By CHARLES G. CLARKE, ASC

THE PERRENIAL CLAIMS to the invention of motion pictures go on unabated year after year. As many experimenters in various nations, around the turn of the century, had worked to develop toys and machines to demonstrate the persistence - of - vision principle, it is natural for reasons of pride that nationals in each country have claimed their countryman was the true inventor of movies. Thus many Britons credit their Friese-Greene with the invention; the French, their Marey; and the Germans have put forth evidence that Oscar Messter is to be considered. And, of course, the Russians are claiming their man did it, too! I do not propose to go into that discussion here, for the various claims are presented in several books and journals; so it is a case of weighing the evidence and making a choice according to the scales you choose to use.

CHAS S CLARKE, ASC

However, a new angle is currently going the rounds. Some writings have recently been published which purport to show that Thomas A. Edison had nothing to do with the motion picture, but rather that one of his employees did all the work and Edison stole all the credit! Fortunately, sworn testimony is extant that furnishes ample evidence that all this is nothing more than a bald-faced attempt to be controversial and to discredit and confuse.

As has been generally known for the past seventy years, Edison, at his laboratory in West Orange, New Jersey, had many experiments constantly in progress of development. He had built up a staff of employees who were skilled mechanics, electrical experts and chemists who worked singly or together on them. He never tried to hide this fact, and published a picture of his staff in 1894, herewith reproduced from Dickson's "Life of Thomas A. Edison." These men carried out Edison's instructions toward the perfection of the experiments currently in work. Often several men worked on a given project such as the motion picture experiments. Edison's reputation as a creative inventor caused outside opportunists to try to find out what was going on inside his laboratory by approaching his employees. The rewards they offered were so tempting that it is surprising there were not more defections than there were.

When in 1887, as Edison stated, "the idea occurred to me to devise an instrument to do for the eye what the phonograph does for the ear," clearly photography was

THOMAS A. EDISON and his Orange Laboratory staff (about 1894) Edison is seated in front row, 5th from left Others are identified in the photo tracing at right Photo was first published in "Life and Inventions of Thomas Alva Edison," by W K L and Antonia Dickson, published in London in 1894

indicated. In 1881 he had hired William Kennedy Laurl Dickson, a bright, well-educated youth. Dickson was first employed in the electrical testing plant in New York city, but in 1886 he was called over to the Edison laboratory in West Orange. Meantime, Dickson acquired some experience in photography, so in 1887 he was assigned to follow through with experiments on the kinetograph, as the movie camera was then known.

After many trials with transparent cylinder sound-picture machines, horizontal transport-of-film machines, and 16mm film machines, the laboratory finally perfected a vertical pull-down film mechanism which, for the first time anywhere, made motion pictures a successful reality. For this machine, rolls of 70mm Kodak camera film were slit to provide film 35mm in width, which to this day is the world's standard. During four years of on-again/off-again experiments on the kinetograph, several of the men in the shop were delegated at various times to build and construct special parts for the machines, under the instructions of Edison.

When the machine was ready for public demonstration at the laboratory, the press was invited to see the newest wonder, and Dickson and his sister became the authorized authors on the subject. In June, 1894, Century Magazine published their story of the invention, which I republished in 1939 in book form. In early 1895, a

Continued on Next Page

360 Complainant's Exhibits.

Complainant's Exhibit Work on Kinetoscope Experiment from February 1, 1889, to February 1, 1890.

1437	Pat Maker	J G East	week ending	Feb 7 1889	15½ hrs.	20	4 65	
	Blk Smith	R Hepworth	"	Feb 14 "	5 "	35	1 75	
	Blk Smith Helper	Geo Gilmore	"	"	5 "	20	1 00	
1438	Machinist	R Grabickaky	"	Feb 21 "	14 "	30	4 20	
		S Wheelwright	"	Feb 28, "	20 "	27½	5 50	
		Julius Harburger	"	"	14 "	30½	3 75	
		R Grabickaky	"	"	43 "	40	12 00	
		S Wheelwright	"	Mar 7, "	30 "	27½	8 25	
		Henry Riebe	"	"	38 "	30	11 40	
		R Grabickaky	"	"	3½ "	30	75	
		E Neubert	"	"	42 "	26½	12 01	
		Leon Morlet	"	"	5 "	30	1 50	
	Pat Maker	A Ludecke	"	"	2 "	16½	33	
	Machinist	E Neubert	"	Mar 14, "	49 "	26½	13 07	
		E Neubert	"	Mar 21 "	51½ "	26½	13 74	
		E Neubert	"	Mar 28,	57½ "	26½	15 33	
		E Neubert	"	Apr 4, "	40 "	26½	10 00	
		E Neubert	"	Apr 11	50 "	30½	12 25	
		E Neubert	"	Apr 18 "	38 "	26½	13 14	
1439		E Neubert	"	May 2, "	16½ "	26½	4 13	
		E Neubert	"	May 13 "	30 "	26½	13-00	
		E Neubert	"	May 23, "	30 "	26½	15 00	
	Blk Smith	B Hepworth	"	"	1 "	35	35	
	Blk Smith Helper	Geo Gilmore	"	"	1 "	20	20	
	Machinist	E Neubert	"	May 30 "	30 "	26½	16.00	
		F Ott	"	June 27	45 "	41½	18 75	
	Experntr	W K L Dickson	"	"	3 days	3 00	15 00	
		C A Brown	"	"	3	2 50	7 50	
	Machinist	F Ott	"	July 4,	54 hrs.	41½	22 50	
		Henry Riebe	"	"	15½ "	30	4 75	
	Experntr	W K L Dickson	"	"	Week	—	30 00	
		C A Brown	"	"	"		15 00	
	Carpenter	I Friskhorn	"	"	½ hr	27½	14	
1440	Machinist	F Ott	"	July 11, "	2 hrs	41½	2 08	
		Henry Riebe	"	"	36½ "	30	13 32	
	Pat Maker	J S Birney	"	"	5½ "	35	1 93	
	Carpenter	I Friskhora	"	"	4 "	27½	2 00	
	Machinist	F Ott	"	July 18 "	71 "	41½	29 79	
	Experntr	W K L Dickson	"	"	Week		30 00	
		C A Brown	"	"	"		15 00	
	Pat Maker	A Ludecke	"	"	4 hrs.	16½	67	
	Machinist	F Ott	"	July 25, "	73 "	41½	30.00	
	Experntr	W K L Dickson	"	"	Week		30 00	
		C A Brown	"	"	"		15 00	
	Pat Maker	A Ludecke	"	"	1 hr	17	17	
	Carpenter	I Friskhora	"	"	17 hrs	27½	4 87	
	Machinist	F Ott	"	Aug 1, "	72 "	41½	30 00	
		E Lantie	"	"	164 "	25	4 13	
	Experntr	W K L Dickson	"	"	Week		30.00	
		C A Brown	"	"	"		15 00	
	Machinist	W Westring	"	Aug 6, "	23½ hrs.	30	7 13	

Complainant's Exhibits. 361

1441	Machinist	F Ott	week ending	Aug 8, 1889	17 hrs	41½	7 08	
	Experntr	W K L Dickson	"	"	½ Week	—	15 00	
		C A Brown	"	"	Week	—	15 00	
	Carpenter	S Allen	"	"	7½ hrs	27½	2 07	
	Machinist	W Westring	"	Aug 15 "	11½ "	30	3 47	
		F Ott	"	"	8 "	41½	3 73	
	Experntr	W K L Dickson	"	"	Week	—	30 00	
		C A Brown	"	"	"	—	15 00	
	Machinist	F Ott	"	Aug 22, "	3 hrs	41½	2 08	
	Experntr	W K L Dickson	"	"	Week	—	30 00	
		C A Brown	"	"	"	—	15 00	
	Carpenter	S Allen	"	"	14 hrs.	27½	41	
	Experntr	W K L Dickson	"	Aug 30, "	½ Week	—	15 00	
	Pat Maker	H Leonard	"	"	8 hrs	30	30	1442
	Machinist	S Wheelwright	"	Sept 6, "	48 "	27½	11.55	
		R Grabickaky	"	"	13 "	30	4 30	
	Experntr	W K L Dickson	"	"	Week	—	00 00	
		W K L Dickson	"	Sept 12, "	½ Week	—	10 00	
	Machinist	H Nickau	"	Sept 10, "	20 hrs.	26½	8 36	
	Experntr	W K L Dickson	"	"	1½ days	—	8 73	
		C A Brown	"	"	½ Week	—	7 50	
	Machinist	H Nickau	"	Sept 26, "	1½ hrs	26½	40	
	Experntr	W K L Dickson	"	"	Week	—	30 00	
		C A Brown	"	"	"	—	15 00	
	Machinist	W Westring	"	Oct 3, "	38½ hrs	30	10 13	
		F Ott	"	"	8½ "	41½	3 40	
		H Kayser	"	"	31½ "	30	10 31	
	Experntr	W K L Dickson	"	"	Week	—	30 00	
		C A Brown	"	"	"	—	15 00	1443
	Machinist	W Westring	"	Oct 10, "	9 hrs	30	2 40	
		F Ott	"	"	31½ "	41½	13.13	
		H Kayser	"	"	19½ "	30	5 77	
	Experntr	W K L Dickson	"	"	Week	—	30 00	
		C A Brown	"	"	"	—	15 00	
	Blk Smith	B Hepworth	"	"	2 hrs.	35	70	
	Blk Smith Helper	Geo Gilmore	"	"	2 "	20	40	
	Machinist	H Wolke	"	Oct 24, "	3½ "	30	78	
		H Wolke	"	Oct 31 "	2½ "	35	88	
	Pat Maker	H Leonard	"	"	7½ "	30	2.16	
		R Arnol	"	"	17½ "	30	5 15	
	Machinist	H Nickau	"	Nov 7, "	10½ "	26½	2.73	
		H Wolke	"	"	52 "	30	18 20	
		H Wolke	"	Nov 14, "	90 "	35	31 00	
		H Kayser	"	Nov 21, "	30½ "	35	10 37	1444
		H Wolke	"	"	90 "	35	31 00	
		H Kayser	"	Nov 28, "	1 "	33	33	
		H Wolke	"	"	53½ "	35	18.38	
		H Wolke	"	Dec 5, "	90 "	35	31 00	
		H Wolke	"	Dec 12, "	60 "	35	21 00	
		H Wolke	"	Dec 19, "	60 "	35	21.00	
		H Wolke	"	Dec 26, "	49½ "	35	17 44	
		H Wolke	"	Jan 2 1890	13½ "	35	3 88	
	Experntr	W K L Dickson	"	"	½ Week	—	15 00	
		C A Brown	"	"	"	—	8 00	
	Machinist	Henri Riebe	"	Jan 8, "	30½ hrs.	30	9 13	
		Thos Thrige	"	"	3½ "	26½	1 82	
		H Spengler	"	"	13½ "	25	4 70	
	Carpenter	Sand Allin	"	"	8 "	27½	2 20	
	Machinist	R Spengler	"	Jan. 10, "	6½ "	30	1 84	
	Experntr	W K L Dickson	"	"	½ Week	—	10 00	

TWO PAGES from court records of Edison's suit against American Mutoscope & Biograph Company, which reveal the size of his laboratory staff and the hourly rate of pay at each member These records show, as author Clarke points out in his accompanying article, that Thomas A. Edison had many experiments constantly in progress . had built up a staff of employees who were skilled mechanics electrical experts and chemists who worked singly or together on them

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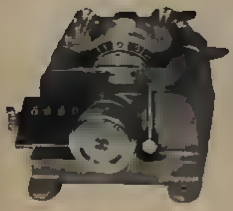

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CASE FOR THE INVENTOR

Continued from Preceding Page

booklet reprint was issued to accompany the kinetoscope viewing machines, which by now were on the market. Mr. Terry Ramsaye stated in his review of my reprint (Motion Picture Herald, January 16, 1943) in part:

"Mr. Dickson intended no falsehoods, but his hopes and his vocabulary dragged him headforemost into gross misstatements, by which many are yet even misled. The cold fact is that Mr. Dickson's writings, such as recorded here, were most of a period when he worked days for Edison, and crossed the river in the night to work for and with the Lathams, of Eidoloscope fame, secretly at a little shop at 35 Frankfort Street under Brooklyn Bridge."

In a letter to me, Mr. Ramsaye further stated:

"As you will deduct from my review, Mr Dickson was historically unreliable, to state the matter gently. He double-crossed Thomas A. Edison abundantly Dickson was fired from the Edison organization at the instance of the manager, W E. Gilmore, because Mr. Gilmore objected to the fact that Dickson had made what he felt was an irregular arrangement for the purchase of Blizzard batteries for use in certain mechanisms at a time when Edison was engaged in the manufacture of batteries. It is perhaps not a coincidence that Edison's drawings for the kinetoscope disappeared at the same time Mr. Dickson left the employ of the Edison organization.

"Many years later an acquaintance of mine, one Fertunand von Madellar, of Vienna, informed me that he had found the drawings in Dickson's possession in London. Mr Edison testified to the disappearance of the drawings in the case of Thomas A Edison vs. The American Mutoscope & Biograph Company in an action instituted in 1897.

"It will be perhaps of interest to you to know that many years later, despite Mr Dickson's defection, Mr. Edison learned that he was very much in want in Europe, and put him on the Edison payroll for a pension, which he received until he died, only a few years ago, then living on the Isle of Jersey Very truly yours. Terry Ramsaye, January 21, 1943."

To his dying day, Dickson kept up

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a correspondence with all who would inquire of his past activities In all his writings Dickson was circumspect in his words about Edison, yet Dickson was always sure to leave the impression that he was the forgotten man For example, I quote in part from a letter in my possession dated, December 26, 1932·

"I have religiously kept out of the limelight so long that it is quite interesting to read your articles. Anyway my love of my Old Chief has been ever to give him loyalty, as I should. all the credit for the Standardized Commercial Kinetograph of today & I am quite content to play Second Fiddle Sincerely yours. W K Laurie Dickson."

Today, there are numerous authors. who have had little or no connection with the film industry. who are writing all about it In many cases they present a fresh viewpoint, backed by honest research. and make a valuable contribution. Unfortunately, a few, to draw attention to themselves through controversy, are ridiculing the efforts of Ramsaye Albert E Smith and others, who were a part of, or were on the scene when the early history of motion pictures was being made. The latter class of writers uncover a jealous rumor. and inflate it to undue proportions to get it published. As they seem to be of the "discredit and confuse" school, a few facts are worth repeating for the record For example. Dickson himself states in his *History of the Kinetoscope. Kinetograph and Kinetophonograph.* 1895. page 14:

"The establishment of harmonious relations between kinetograph and phonograph was a harrowing task and would have broken the spirit of inventors less inured to hardship and discouragement than Edison's veterans—".

Terry Ramsaye refers, in his letter above, to the suit of Edison vs Mutoscope, and I quote from the sworn testimony as it refers to those who assisted in the kinetograph inventions:

DEPOSITION OF THOMAS A EDISON, JANUARY 29, 1900·

Q. I observe that your patent for the kinetograph was not applied for until August, 1891. What reason was there for this delay between 1899 and 1891?

A Well, I had been very unfortunate in my patents. I never could get any sustained, and I thought I would try and keep it a kind of trade secret, but afterwards I got suspicious and thought I had better patent it. which I did

Q Who was the man principally engaged in this experimental work under your instructions?

A Mr Kennedy Laurie Dickson was the man who did all the photographing.

Q Mr. W K L. Dickson?

A. Yes. sir. That is the man

Q Is Mr. Dickson still employed by you?

A. No. sir

Q Have you heard where he is working?

A Working I believe. for the Biograph Company

Q For the defendant, the American Mutoscope Company?

A Yes sir.

Q Did Mr. Dickson have charge of the note books relating to this subject?

A. Yes. sir.

Q. Have you had search made for those note books since he left the laboratory?

A Yes, sir

Q. Have you been able to find them?

A. Not a scrap.

DEPOSITION OF C. H. KAYSER, CHIEF EXPERIMENTER AT THE EDISON PHONOGRAPH WORKS

Q. I call your attention to a machine which is known as the 1889 strip kinetograph Did you ever see that machine before?

A. Yes, sir. I saw part of the machine in 1889, and later on it was in pretty fair condition to take pictures; we took pictures with it in fact. and then I made some different changes on it to improve the taking of pictures.

Q. When did you start work on this machine?

A If I recollect right, in the fall of 1889

Q. What was the general nature of the work?

A. Stop motion to stop the film—intermittent motion.

DEPOSITION OF FRED P. OTT. INSTRUMENT MAKER AND ORIGINAL SUBJECT OF KINETOSCOPE SCENES:

Q. Did you do any work on Mr. Edison's apparatus for taking motion pictures?

A. Yes, sir.

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Q. Do you recall when you did this first work?

A Well, the first work was on that cylinder machine that I did; that is before Mr. Edison went to Paris. (Edison left for Paris on Aug. 3, 1889).

Q Do you see among the exhibits here anything that looks like the machine you worked on?

A. I can point out quite a few of them; that is one of them (pointing to Edison Cylinder Exhibit #3) I built that; that is, the screw thread and part of the drum.

Q Do you recollect anything that was done about the exhibiting machine before Mr. Edison left for Paris? Did Mr. Edison have anything to do with it before he left for Paris?

A. Oh, yes; he left all his orders and instructions of what he wanted done.

I could go on and quote from the testimony to show that others besides Dickson worked on the motion picture experiments, but this is best summed up in the actual time records kept by the bookkeeper, herewith reproduced I believe it has been shown that Mr. Dickson was not the only one who worked on the Edison experiments and that he was far more generously treated than his actions merited ■

IT PAYS TO MODIFY

Continued from Page 668

shooting the final scene. This is essential where sound is recorded or where the action must be reproduced without any change in camera speed As shooting continues, with its subsequent battery drain, the rheostat setting is advanced as required to keep the current input to the motor at 24 volts All this has involved some modifications and additions to our camera equipment. which are shown in the accompanying photographs

The modifications are comparatively simple and inexpensive and consist of

1—Addition of a small instrument panel secured to the camera motor with the same screws that normally hold the etched "voltage speed" information plate to the motor.

2—On this panel are mounted the following components.

a) Start/stop switch which controls both camera and tape recorder,

b) 0-to-30 volt miniature DC voltmeter,

b) Miniature 15-watt, 30 ohm rheostat,

d) Subminiature jack for tape recorder input.

The general arrangement and mounting of the switch, rheostat, voltmeter and tape recorder jack is shown in Fig. 1 These components are mounted on a panel which is fabricated from an aluminum chassis similar to what amateur radio bugs use, and is obtainable at any radio parts store Of course, all the above named items are of the sub-miniature variety in order that the size and weight of our equipment be kept to a minimum.

When removing the voltage data plate from the motor housing. we had to be careful that the spring under this plate did not fly out, and that it was properly replaced later as it retains proper end-thrust on the motor bearings.

When photographing and recording sound single-handed, which is frequently the case. it is most inconvenient and time-consuming to have to start and stop the recorder before and after each shot, especially if the recorder is located thirty or forty feet away from the camera Of course. the recorder can he left running, hut here again tape cannot he wasted when shooting in remote areas, not only because of its cost but because of its unavailability in many parts of the world, in remote locations far from civilization At 7½" per second, which speed is necessary if good fidelity is to be obtained, it does not take long to run off a lot of blank tape; therefore we decided that as long as we were starting and stopping the camera by means of a switch, we might as well use the same switch to start and stop the recorder. For this we incorporated a jack into which the remote control plug of the tape recorder is inserted. Thus, a flick of the switch starts both the camera and the recorder simultaneously As for wiring, this is almost self-evident, but for those readers who require it, Fig. 4 on this page shows the schematic wiring diagram Wiring is not at all difficult since both the switch and rheostat are in series and the voltmeter goes across the line between rheostat and the motor.

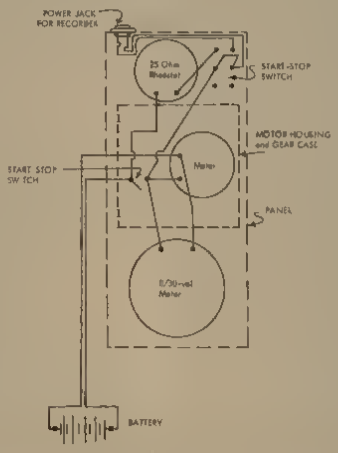

FIG 4—Schematic wiring diagram of author's camera-recorder control panel

Several other changes were made in our equipment to save time and make it more convenient to set up For one thing, it will be noted from the illustrations that our Bolex has installed on it a Rex-O-Fader, permitting us to make uniform fade-ins, fade outs and lap dissolves. Where these effects can be accomplished in the camera, a savings can be made in editing time and reproduction costs Unfortunately. however, with the basic Bolex camera. it is not possible to mount the electric motor on it when the Rex-O-Fader is also on the camera. This necessitated removing the electric motor to install the fader when a fade or dissolve was needed and then removing the fader when the motor was re-installed This procedure was not only inconvenient hut was also time consuming and sometimes impossible where the action was continuous and time was not available for this transfer of accessories

We partially solved the problem by mounting the motor on the outside of the Rex-O-Fader This required that the head of the lower mounting screw in the fader be drilled and tapped to accept the knurled mounting screw at the bottom of the electric motor (Fig 2). Since the motor was now positioned away from the body of the camera a distance equivalent to the thickness of the Rex-O Fader, the motor drive shaft was consequently too short and had to be lengthened The drive shaft of the Bolex has a universal joint in it which made lengthening the shaft very simple. By knocking out the little pin securing the outer section of the drive shaft, this section was then replaced with one 3/8th of an inch longer. but

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identical in all other dimensions. As may be seen in Fig. 2, with the fader hand crank removed, the fader may be mounted on the camera by means of the two knurled mounting screws of the motor.

One more problem existed, however; the arm connecting the Rex-O-Fader and the variable shutter lever interfered with the motor drive shaft. The solution to this problem is shown in Fig. 2. A piece of 1/16" steel was filed out in a U-shape, and by means of two small screws at each end, attached to the fader connecting arm. It is suggested that should readers attempt this modification, they first fabricate this U-shaped link and secure it in place by drilling and tapping, as shown in Fig. 2. After the U-link is securely in place, the original arm can then be cut away. This will insure that no change will take place in the positioning of the pin on the Rex-O Fader arm when it engages the variable-shutter operating lever. It should also be noted that the U-link is on the camera side of the operation arm and is secured by two #2-56 filister head screws at each end. This is not a perfect solution, inasmuch as the Rex-O Fader will not work when the motor is driving the camera; but

removal of the motor is very quickly accomplished for making a fade or a dissolve and the motor can then be replaced in a matter of seconds to continue normal photography. Previously it was necessary to remove the motor, install the Rex-O-Fader for a fade or dissolve, then remove it and re-mount the motor.

The solution outlined above saves about 90% of the time previously required when attaching and demounting the fader was involved. In order that a perfect solution be achieved, i.e., that it be possible to use the fader when the camera is being powered by the electric motor, it would be necessary to re-design the inner mechanism of the camera in such a way that the hand crank shaft would rotate when the spring motor of the camera was disengaged, as required when using the electric motor. This would mean a complete re-design and re-work of the camera spring drive mechanism. We find that our 90% solution outlined above has filled our requirements, and we did not therefore carry the modifications into the camera mechanism, which would really be a factory job.

When using the Bolex camera with a zoom lens but without the electric motor, one hand must be used to operate the zoom lens, another to control the pan head—leaving no way for the operator to press the button to start and stop the camera. The solution, of course, is obvious—a cable release that extends down the handle of the pan head so that both can be operated simultaneously with one hand. The problem is that the regular Bolex cable release cannot be attached to the side of the camera when the fader is in place—which probably is why Paillard, Inc., has provided for mounting it on the front of the camera.

I have found, however, that when the cable release is attached to the stop start button on front of the camera, the camera will not stop at the end of a fade but will continue running off film with the shutter closed. The fader is intended to be used with the button on the side of the camera. When this button is moved to its extreme rearward position, it locks the camera in running position; and at the end of the scene, the lever of the fader is depressed, thus starting the 40 frame fade-out—at the end of which the side operating button is automatically released to neutral position, thus stopping the camera on the last frame of the fade-out. Where the camera continues running *after* the 40th frame of the fade-out, an undetermined amount of film continues through the camera until it is stopped manually. By this time it is impossible to determine how far one must backwind the film to superimpose the fade-in for a normal dissolve effect.

Solving this, then, was our final problem. It involved working over the cable release fitting, as shown in Figs. 2 and 3, so it could be used on the side of the camera. In operation, the cable release is depressed part way to operate the camera for normal shots (without fades). When a fade-out is desired, the release is depressed completely, which automatically moves the starting button to the "M" or locked position, and enables the camera to continue operating after the cameraman removes his finger from the cable release. When the last or 40th frame of the fade-out is exposed, the camera automatically stops.

As a convenience to the reader, a description of the components necessary for the control panel, described earlier and shown in the photos, follows:

Stop-start switch:

Subminiature toggle switch, double-pole, double throw, 10-amp capacity. Catalog No. SW-76. $1.49.

0-30 volt D.C. voltmeter:

1-9/16" x 1 9/16" face. $3.75.

Rheostat:

Ohmite type E, 25-ohm, 12½-watt capacity. $4.03.

Ohmite knob, type 5151. 28¢.

The stop-start switch and voltmeter are obtainable from Lafayette Electronics, 165-08 Liberty Ave., Jamaica, New York. The rheostat and knob, from Electronic Components for Industry, 2427 S. Brentwood Blvd., St. Louis 17, Mo. ■

"BACK STREET"

Continued from Page 662

up for a week by a blanket of fog which descended on the scene, making acceptable photography impossible.

In photographing "Back Street," Cortez employed lighting in an extremely subtle way to satisfy requirements which might have been regarded by a lesser technician as paradoxical, if not impossible. The action of the story takes place over a span of years. In order to give this idea verisimili-

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tude it was necessary that Susan Hayward appear to age gradually, but at the same time retain her radiant beauty. This was achieved without altering her make-up except for the closing scene in which Miss Hayward appears pale and drawn, overwhelmed by the shock of her lover's death. Through the use of subtly altered lighting and studied camera angles, the photography effectively projects the desired mellowing effect

Cortez, long a personal friend of Miss Hayward, has photographed several of her pictures and through this association there has developed a special professional rapport which enables him to sense her feelings and emotions on the set. "I can usually tell what she's thinking," he said, "and I know not only how best to photograph her face, but what is going on in her mind and emotions"

Something of this same perception greatly influenced Cortez's photography of John Gavin in the hospital room preceding his death Thoughtful lighting of this scene enabled the photography to convey more than any script writer could have expressed in several pages of script On the screen, the sheer lonliness of a man at point of death is poignantly conveyed, and at the same time there is the strong suggestion of the promise of another and presumably better life to follow The lighting is basically low key—cool, pale blue-green in tone—yet suffused with an unearthly glow strongly suggesting that twilight zone between two worlds where man pauses an instant as the last spark of life flickers and dies

The closing sequence of the picture presented a unique lighting problem. Miss Hayward is sitting alone in the living room of the farmhouse, mourning her lover The camera pulls back, then pans to a framed sketch of John Gavin on a nearby wall, reflecting the images of his three children in the glass.

To achieve this seemingly simple effect, it was necessary to gradually build up the light level on the group of players from 800 to almost 4,000 foot candles during the course of the camera movement

These are but a few of the subtle but effective photographic touches which are to be seen throughout "Back Street."

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ROCKETDYNE

Continued from Page 671

one time. Sometimes the script is completed in advance. More often, it is written while shooting is in progress. And occasionally it is written after all shooting has been completed. There are, at present, five producer-writer directors in the unit.

A similar combining of talents has been found valuable in the fields of photography and editing, once regarded here as separate skills. In actual practice the cameraman-editor combination saves a great deal of time and produces a clearer, more perceptive and better unified result. The cameraman, knowing that he is going to edit what he shoots, will be especially careful when filming to match angles, allow for dissolves and provide sufficient cutaway shots. He can, in effect, edit as he shoots, getting exactly what he needs and avoid later tussles in the cutting room.

Besides the filmed quarterly progress reports, the film unit supports the National Aeronautics and Space Administration by making special films to educate and indoctrinate personnel relative to a new project. For example, Rocketdyne manufactures the H-1 rocket engine which, in clusters of eight, formed the booster power for the Saturn space vehicle recently launched at Cape Canaveral. Several films have been made to date showing consecutive phases in the development of this engine, and a crew of three technicians were dispatched to the Cape to film the recent firing. The result will be a highly interpretive and exploratory film report with a broad field of usefulness in familiarizing personnel with the project.

The unit also makes special films to support corporate management in personal appearances before learned societies. Recently, in addressing the American Rocket Society during its Space Report to the Nation in New York, S. K. Hoffman, President of Rocketdyne, used motion pictures extensively in tracing the history of liquid-fuel rocket propulsion.

Filming the many highly technical phases of rocket engine development presents photographic problems of a unique nature. In photographing engine firings, for example, the cameras must be set up some distance away and housed in special protective blimps to withstand the blast. Actual camera operation is remotely controlled by radio. "The main problem," said Schaefer, "is one of exposure. The flame from the engine is so bright that if we expose for it, everything else will be underexposed. Ideally the lens aperture should be controlled automatically by an electronic device which, at the instant of firing, would stop down the lens. This firing actually takes place in a mattter of milli seconds, and no device has yet been developed that will alter a lens setting so rapidly." Rocketdyne cameramen work around the problem by cutting a neutral density filter to cover the area of the flame pattern in the film frame, this area being reasonably definable as to size and shape. The shaped filter is mounted in the matte box in exact juxtaposition to the flame area and effectively holds back exposure of that portion while allowing the remaining areas to expose normally.

For a tricky night sequence filmed recently, an engine was set-up under special conditions and it was especially important to show details of the stand. The nearest camera was set up a hundred feet away. To solve the acute lighting problem, giant searchlights (of the kind used in Hollywood for film premieres) were brought in and augmented with brute arcs. The cameramen were shooting "blind" and they knew they would have only one crack at the firing. Fortunately, their exposure calculations were correct and the resultant scene was perfect.

In shooting color within various areas of the plant, color temperature balance is a constant problem. All the plant interiors are lighted with mercury vapor or flourescent lamps, and there is often considerable daylight coming from the skylights and open ports. Wherever possible Rocketdyne cameramen try to match the available light with incandescent illumination, but where this is not possible, each lamp is then painstakingly filtered to balance the predominant color temperature.

When shooting in the plant, film production crews are frequently confronted with immense areas in back of the subject which could not possibly be lighted. It is then necessary to improvise backgrounds by moving in flats, room dividers or stacks of supplies covered with drop cloths. In one challenging scene a 30 foot rocket engine had to be shown against a totally black background. Normally, this would have necessitated use of a black cyclorama

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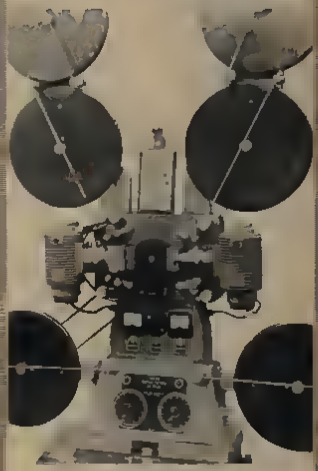

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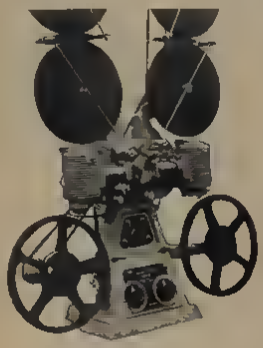

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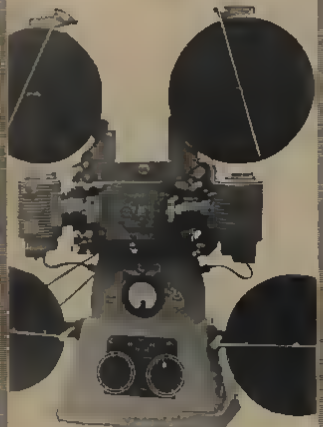

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of immense proportions In this case the crew painted the floor a dull black and placed the engine against a night sky and a relatively small expanse of black drapery.

Similar ingenuity is exhibited in the adaptation of non-photographic equipment to serve some needed purpose. A fork-lift truck is sometimes pressed into service as a camera crane, with the camera mounted on a platform placed on the forks. Horizontal gantry cranes permanently installed to move heavy equipment are often commandeered by the crew for use as overhead camera dollies.

This is not to imply that the Rocketdyne unit is in any way makeshift. On the contrary, it is exceptionally well equipped as far as the basics of equipment are concerned. It has two 16mm Arriflex cameras, one Arriflex blimp for sync sound photography, two 70DH 16mm Bell & Howell cameras, one 16mm Bolex Supreme camera, and a full complement of 16mm lenses ranging from 12mm wide-angle to 130mm telephoto, and a Berthiot Pan Cinor 17-70mm zoom lens. Associated photographic equipment and accessories include: one Mitchell, two Arriflex, and three Pro-Junior tripods; one Miller and one O'Connor fluid tripod head, two Arriflex heads and three Pro-Junior heads, plus two camera dollies that provide mobility for moving and trucking shots.

Power for lighting equipment is provided by two 80 ampere transformer carts and 2000 feet of 4/0 lighting cable. The lamp units include ten 2-kw Junior Spots, four 5-kw Senior Spots, one 10-kw spot, eight 1000-watt Bell lights, seven 5-kw Sky Pan lights and a substantial inventory of lighting equipment accessories such as barn doors, diffusers, spider boxes, etc.

The film unit prefers to do most of its sound recording in commercial studios in Hollywood where excellent facilities and expert technicians are always available. However, it does record some sound tracks right in the department by means of a Magnasync 602 Recorder. Accessory sound equipment includes an Altec 637 multi-directional microphone, one Electro-Voice microphone and a microphone boom.

Editing equipment for the unit's four busy cutting rooms includes three Moviolas, six film synchronizers, four Zeiss Moviscop viewers, five 35-16mm Bell & Howell hot splicers, five sets of film rewinds, one power rewind, two Kinevox magnetic sound readers, one Kinevox optical sound reader and one 35mm Ace Rotary film viewer.

There is a small studio at the Rocketdyne plant which serves as a recording room, a stage for the shooting of inserts and simple sync-sound interviews and an interlocking approval screening room When more elaborate lip-sync shooting facilities are required, a commercial soundstage in Hollywood is rented.

A unique Rocketdyne innovation is a specially designed cart which is used for storing, moving and shipping heavy lighting equipment, dollies, cables, transformers and associated motion picture gear The carts are approximately 4 feet high, 3½ feet wide and 7 feet long, with tops that raise and sides that open up so that equipment can be moved in and out quickly. Each cart is packed to accomodate a certain size or type of job, Several carts can be hitched together and pulled to any location in the plant. or they can be rolled onto trucks for longer hauls. When they are to be used on distant locations, they are sealed with steel bands and shipped as is, eliminating the necessity for crating and uncrating.

Rocketdyne's Documentary Motion Picture Unit can point with pride to its many film accomplishments Among the more than 400 films which the unit has produced to date are 32 formal film reports, ranging in length from 12 to 20 minutes each; 60 Atlas newsreels, 48 Thor newsreels, and 24 ABMA monthly film reports Of all these, the unit's most prideful production, perhaps, is "Road To The Stars," a public relations film which won the First Award in the Public Relations Films category of the Industrial Film Producers Association 1961 competition. ■

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HELIVISION—AERIAL PHOTOGRAPHY SYSTEM

Continued from Page 665

As, at present, the Helivision equipment is rented or leased instead of sold outright, the company usually provides with it a 16mm or 35mm camera of the type required by the lessee—even a wide-screen camera such as Technirama

In the photos on page 664, the Helivision equipment is shown with a specially equipped Cameflex camera. The special equipment normally includes a motor driven zoom lens having a range from 35mm to 140mm focal length. This is controlled by an electric motor that operates under pre-set operating conditions, thus enabling speed of the zoom to be regulated as required.

The camera is suspended from the overhead gantry so that it is positioned before the operator who, with the aid of two convenient levers, may operate the zoom lens, tilting and panning of the camera, and the starting and stopping of the camera motor There's an adjustable mirror at the front of the camera which reflects the lens scales to the operator, enabling him to make any necessary lens adjustments from his position behind the camera without having to swing it around toward him

It is logical to question the wisdom of using a zoom lens having the extreme focal length of 140mm with this system But shooting from a helicopter is very different from shooting with the camera on the ground or on the sound stage. When working from a helicopter and you wish to film a man in closeup, it is essential for the subject to remain outside the wind zone or downdraft of the helicopter. Using the 140mm zoom lens presents none of the problems that would otherwise be encountered, thanks to the stabilizing effect of the vibrationless Helivision system.

The Helivision system, which at present is available only in Europe, and already has been used by some Hollywood film production companies working there, can be hired with or without a helicopter to carry the equipment. However, according to Films Montsouris, the Parisian company which helped to develop Helivision, the equipment can be mounted immediately in any helicopter having the

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equivalent or a greater load capacity than that of the French Alouette II, shown in the accompanying photographs.

Films Montsouris, the sole holder of the rights for the Helivision system, points out that the system greatly expands the range of moving camera shots without any of the inconveniences that attend the use of camera cranes and booms. In the production of outdoor films, historical spectacles, adventure films and those featuring man hunts, the company points out invariably it is essential to shoot long distance views with a dolly- or crane-mounted camera and tracks. The setting up of the necessary equipment for this requires much care and is time consuming where production costs must be closely figured. Also, such shots usually require that they be made on reasonably even terrain to facilitate the use of dolly and tracks.

Since Helivision is not dependent upon conditions of terrain, spectacular travelling or follow shots can be made with the system with a minimum of pre-shooting preparation. A cavalry charge can be filmed in an impressive wide-screen view, and the camera can, by means of the zoom lens, gradually concentrate attention on a single element within the scene—a closeup of a person's face, for example.

Although Helivision equipment presently is not available in the United States, it is not at all unlikely that ultimately it will be made available here by one or more of the camera equipment rental companies. Further information concerning it may be had by communicating with Films Montsouris, 25 Avenue Reille, Paris 14, France. ■

TECHNICAL TRAINING FILM

Continued from Page 673

naturally, which did an even better job for us.

Our tests showed that the wooden models broke up more realistically and that the best camera speed was 250 f.p.s. The models were suspended by one central wire, while two other wires, one from each wing tip, steadied the model in the wind and also carried the electric current to fire the charge.

Cut down to a few feet, preceded by shots of the missile leaving the Sea Vixen and with a suitable effects track, our explosion seemed convincing.

But some weeks afterwards I was invited to see a film which included a genuine camera gun shot of a Fire streak attack on a radio controlled target aircraft. I sat through the first part of the film apprehensively. This would be sure to show us up. Would we have to think up a completely new idea? Start all over again?

The film built up to its climax. Firestreak was fired and a full size target aircraft blew up in mid-air.

It looked for the first few seconds at least, exactly like our model explosion.

With a sigh of relief I forgot about aircraft and started to worry about the next problem for the next film. ■

PHOTOGRAPHY IN COAL MINE

Continued from Page 675

dio standards. It consisted of the director, director of photography, assistant cameraman, key grip, two assistant grips, and sound man.

We brought along three 16mm cameras: a Mitchell, Auricon Pro-1200, and a modified Cine Special. The No. 1 working camera was the Mitchell; the Auricon served as a standby. All cameras functioned perfectly, and there were no failures at any time.

When we scouted the location earlier, I decided to use an overall fill light (since a mine is naturally dark, or in semi-darkness) and to prop up this with a kicker from the rear, with the ratio averaging about 10 to 1. The key was established at 150 foot candles, the exposure at T4—with the shutter opening at 235 degrees. This proved most effective, and the lighting scheme lent added impact to the emotional scenes. Much of the film concerns a conflict between two miners—a white man and a negro—and by playing low key lighting on their tense faces, particularly in the closeups, this is implied visually to give impact to their words. For most of the shots in this sequence, the Mitchell camera was mounted on a gearhead, which in turn was mounted on a box placed on the ground to record this action with the desired psychological impact.

Perhaps our most interesting and challenging scene was the rock fall or cave-in, which cuts off three miners from the exit. Here officials of the mine cooperated to the fullest extent that the accident should be staged with utmost realism. It was accomplished by a sort of break away setup staged with com-

Continued on Page 692

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PHOTOGRAPHY IN COAL MINE

Continued from Page 690

plete security to our crew and cast

For this we moved to a new location within the mine—an abandoned shaft—and here mine engineers lent the wisdom of their long experience in selecting a position for the camera that would insure complete safety for all concerned Extra supports were placed around the camera, between the ceiling and floor of the mine, to protect camera and operator from the rolling debris, once the "fall" was triggered.

The lighting for this scene was what you'd term general, since no people were to be shown in the scene, and the location was such that we were able to light it from three sides. At this location, no AC current was available, and we were obliged to use DC from a battery source supplied by the mine We ran the available 180 volts DC directly into our ColorTran Master Lights, which gave us illumination of 3400° Kelvin

We decided not to risk the Mitchell camera for this scene and used, instead, the spring-driven Cine Special This camera had been modified to take the Mitchell viewfinder, sun shade and matte box The camera was set up on a a tripod about 25 feet from where the rock was calculated to fall This was planned to be triggered by the removal of timber uprights at a given signal. Just before the last timbers were to be pulled. we checked the camera once more to make sure it was operating properly. This hunch paid off, for on this test run the camera jammed There was a quick shuffle as we changed magazines We made another test, and it ran off smoothly Now we were ready for the big scene—the one take shot—for there couldn't be a second

Nor were we ready and had the camera rolling a moment too soon The timbers were released, and the ceiling came crashing down, sending rocks, boulders and dust in every direction. The mass of black coal and rock literally rolled in a big wave toward the camera and stopped within four feet of the tripod legs!

Our original shooting schedule called for 10 days on the mine location and another 9 days in the studio; we finished shooting two days under schedule, including one whole day spent cleaning coal dust from our equipment. Credit for much of the time saved is due the mine officials

who gave us wonderful help in solving the many problems encountered

You have often read newspaper headlines of men trapped in mine disasters This film, "Dark Valley," affords opportunity to observe the reactions of such men as they face death by disaster. ■

BEHIND THE CAMERAS

Continued from Page 658

ROBERT SURTEES, ASC, "Mutiny on the Bounty" (Ultra Panavision & Color; shooting in Tahiti; Arcola Prods.) with Marlon Brando and Trevor Howard Lewis Milestone, director.

PAUL VOGEL, ASC, "Wonderful World of The Brothers Grimm" (MGM Cinerama, Geo. Pal Prod.) with Laurence Harvey and Karl Boehm. Henry Levin and George Pal, director

ROBERT BOONNER, ASC, "The Horizontal Lieutenant" (Euterpe Prod., CScope & Color) with Jim Hutton and Paula Prentiss Richard Thorpe, director.

JACK SWAIN, "Rawhide"*.

PARAMOUNT STUDIOS

DANIEL FAPP, ASC, "The Easter Dinner" (Llenroc Prods., shooting in Rome) with Charlton Heston and Elsa Martinelli Melville Shavelson, producer-director

WILLIAM CLOTHIER, "The Man Who Shot Liberty Valance" (John Ford Prods.) with James Stewart and John Wayne John Ford, director

WILLIAM MARGULIES, ASC, "Outlaws"*

WALTER CASTLE, ASC, HASKELL BOGGS, ASC, "Boss'n"*

FRANK PHILLIPS, "Have Gun Will Travel"*.

PARAMOUNT SUNSET STUDIOS

FLEET SOUTHCOTT, "Gunsmoke"*

LESTER SHORR, ASC, "Pete and Gladys"*.

REPUBLIC STUDIOS

CHARLES BURKE, "Target, the Corruptors"*.

GEORGE DISKANT, ASC, "The Rifleman"*.

WILFRID CLINE, ASC, "Robert Taylor Detectives"*.

HOWARD SCHWARTZ, "Mrs G Goes to College"*.

REVUE STUDIOS

JOHN RUSSELL, ASC, DALE DEVERMAN, NEAL BECKNER, "Alfred Hitchcock Presents"*.

JOHN WARREN, ASC, BENJ KLINE, ASC, LIONEL LINDON, ASC, "87th Precinct"*.

LIONEL LINDON, ASC, ROBERT GOUGH, "The Investigators"*.

BENJ KLINE, ASC, DALE DEVERMAN, "CHECKMATE"*.

JOHN WARREN, ASC, BENJ KLINE, ASC, RAY FLIN, "Thriller"*

ELLIS THACKERY, ASC, JACK MACKENZIE, ASC, "Alcoa Theatre"*.

RAY RENNAHAN, ASC, "Laramie"*

WILLIAM MARGULIES, ASC, JOHN RUSSELL, ASC, 'General Electric Theatre"*

JOHN RUSSELL, ASC, "Tall Man"*.

RAY FLIN, Commercials"*

RUSSELL HARLAN, ASC, "The Spiral Road" (Shooting in Dutch Guiana) with Rock Hudson and Genea Rowlands Robert Mulligan, director.

RUSSELL METTY, ASC, "Touch of Mink' (P'Vision & Color, Granley Prods.) with Cary Grant and Doris Day Delbert Mann, director

JACK MACKENZIE, ASC, "Ichabod and Me"*; "Bachelor Father"*

NEAL BECKNER, "Bob Cummings Show"*.

ELLIS THACKERY, ASC, "Wells Fargo"*.

WALTER STRENGE, ASC, "Wagon Train"*

CLIFFORD STINE, ASC, "The Ugly Americans" (Universal International, shooting in Thailand) with Marlon Brando and Eiji Okada George Englund, producer director.

MACK STENGLER, ASC, "Leave It to Beaver"*.

Continued on Page 694

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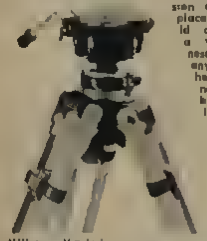

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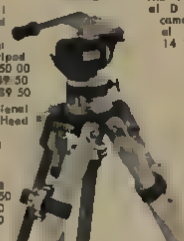

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BEHIND THE CAMERAS

Continued from Preceding Page

DOUGLAS SLOCOMBE, 'Freud" (shooting in Munich) with Montgomery Clift and Susannah York John Huston, producer-director.

TWENTIETH CENTURY-FOX

LEE GARMES, ASC, 'Adventures of a Young Man" (C'Scope & Color, Jerry Wald Prod.) with Richard Beymer and Paul Newman Martin Ritt, director

ARTHUR IBBETSON, "The Inspector" (Red Lion Films, shooting in London) with Stephen Boyd and Dalares Hart Philip Dunne, director

KENNETH PEACH, ASC, 'Follow the Sun"*

LLOYD AHERN, ASC, "Adventures in Paradise"*

WILLIAM MELLOR ASC, "State Fair" (C'Scope & DeLuxe color, shooting in Dallas) with Pat Boone and Pamela Tiffin Jose Ferrer director

LEON SHAMROY, ASC, "Cleopatra" (J. Mankiewicz Prod., Todd-AO; shooting in Rome) with Elizabeth Taylor and Richard Burton Joseph Mankiewicz director

WALT DISNEY STUDIOS

WILLIAM SNYDER, ASC, "Bon Voyage" (shooting in Europe) with Fred MacMurray and Jane Wyman James Neilson director

PAUL BEESON, 'The Castaways" (shooting in London) with Maurice Chevalier and Hayley Mills. Robert Stevenson, director

WARNER BROS

HAROLD LIPSTEIN ASC, 'The Chapman Report' (Darryl F Zanuck Prods) with Shelley Winters and Ray Danton George Cukor, director

PENNY RICHARDS, "Joseph Desa" (Dmytryk Wiler Prod for Columbia release, shooting in Rome) with Maximilian Schell and Ricardo Montalban Edw Dmytryk, producer-director

RALPH WOOLSEY, ASC, LEWIS JENNINGS, JACK MARQUETTE, "Hawaiian Eye"*.

ROBERT HOFFMAN "Bronco"*

HAROLD STINE, ASC, J PEVERELL MARLEY, ASC ROBERT TOBEY, ASC, "Surfside 6"*

FRANK CARSON, "Room for One More"*

LEWIS JENNINGS, "Cheyenne"*.

ROBERT TOBEY, ASC, ROBERT HOFFMAN, "77 Sunset Strip"*

BLAIR CLENNON, "Lawman"*.

CHARLES LAWTON, ASC, "Lovers Must Learn" (shooting in Italy) with Troy Donahue and Suzanne Pleshette Delmer Daves, producer-director

RAY FERNSTROM, ASC, "Roaring Twenties"*.

ZIV-UNITED ARTISTS

MONROE ASKINS, "Rip Cord"*

BRICK MARQUARD, "Everglades"*.

CURT FETTERS, 'King of Diamonds"*.

WHAT'S NEW

Continued from Page 647

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Literature

BOOKLETS, CATALOGUES AND BROCHURES AVAILABLE FROM EQUIPMENT MANUFACTURERS

Auricon Zoomiscope

Literature illustrating and describing company's new Zoomiscope extension viewfinder eyepiece for use with model 85 and 85-S-EK Pan Cinor zoom leses is offered by Bach Auricon, Inc., 6902 Romaine, Hollywood 38, Calif.

•

Rental Catalogue

The wide range of motion picture film production equipment available on rental from Camera Equipment Company is described together with data, rates, etc, in company's latest Equipment Rental Catalogue.

•

Lowel-Light Data

A six-page illustrated folder illustrates and describes popular new Lowel Lights and related accessories such as barndoors mounting bracket, gaffer tape, and complete kits Lowel-Light Photo Engineering, 429 W. 54th St, New York 19, N. Y.

•

Sound Effects Catalogue

Sound Recordings, 14 Hathaway Hamlet, Shottery, Warwickshire, England, has issued a 6-page mimeographed brochure listing the tape-recorded sound effects offered by the company for motion picture film production

•

Production Equip. Catalogue

Latest 1961 catalogue of motion picture production equipment offered by The Camera Mart, Inc, is off the press Copies are available free

•

Super Anscochrome Data

Ansco, Binghamton, N. Y.. offers latest data sheet on company's Super Anscochrome PN1 16mm, 35mm and 70mm films Included is data for processing the films at higher-than rated speeds, use of filters, and exposure guide for photoflood illumination. Included. also, is list of motion picture laboratories in the U S offering processing of 16mm Anscochrome PN1 films of all types

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Lens Selector

A four-page lens selector is a feature of the April, 1961, issue of Traid Winds, service publication of Traid Corp, Encino, Calif. Presented is company's full line of optics especially designed to meet the unusual requirements of photographic instrumentation. Included are a unique series of ultra wide-angle lenses up to 180° coverage; fast and lightweight Pantel long focus optics, and relay lenses.

Zoom Lens Correlator

Camera Service Center, 333 West 52nd St., New York 19, N. Y., has issued a one-page leaflet which illustrates and describes its Zoom Lens Correlator with follow focus attachment, which accomplishes accurate alignment of the cross-line in the lens recticle, with the cross-line of the camera, assuring precise zoom shots Also available is company's new equipment rental catalogue.

•

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